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International Journal of Orthodontia and Dentistry for Children

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International Journal of Orthodontia and Dentistry for Children

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International Journal of
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VOL. 20 ST. LOUIS, JULY, 1934 No. 7

ORIGINAL ARTICLES

TREATMENT OF NEUTROCLUSION*

CHARLES A. SPAHN, D.D.S., NEW YORK, N. Y.

ABOUT sixty-five years ago, several general practitioners of dentistry carried on the practice of orthodontia daily in their offices. They recorded the application and progress of treatment, and from time to time gave to the profession short papers describing this treatment. Eventually, each collected sufficient exact information to warrant the publication of several rather extensive volumes pertaining to his specialty, and a great deal of the fundamental principles of orthodontia as practiced today originated in the work of these men.

From that time up to 1900, we find very little written in an organized manner by any other men, with the exception of the late Dr. Edward H. Angle, whose work and efforts continued until a short time ago. He has been, and will be for many years, acknowledged as the stimulator of orthodontic studies which are now being carried on in a great many collateral branches of science throughout the civilized world in order to find a corrective panacea for malformed jaws. These investigations and widely concentrated studies are directed into every conceivable form and avenue, and probably have no precedent in the study of any other branch of medicine. This has no doubt developed because of the prevalence of malocclusion throughout the civilized world. From my observation of the literature published to date, I can assure you that no panacea exists for this disturbance.

Many of us have followed these investigations closely, with the hope that some investigator would produce or evolve a method, either mechanical or biological, whereby we may be assured of the desired results in all classes of malocclusion. Neutroclusion cases are discouraging, particularly to those of us who wish to retain the full complement of teeth for the individual under treatment, for we have been led to believe this was a necessity to good procedure in orthodontic practice. However, we find recorded in many writers' reports

*Presented at the Thirty-Second Annual Meeting of the American Society of Orthodontists, Oklahoma City, November, 1933.

that in certain cases extraction was a requirement, but at no time was a perfect prescription given for this procedure, nor does a method of diagnosis for this detail now exist which cannot be logically contradicted.

At this point, I wish you to note that the judgment necessary to make a satisfactory diagnosis of Class I cases and to carry it out to the successful placing and maintenance of the teeth in the accepted ideal position (meaning without extraction) requires a great deal more knowledge than we seem to possess. The degree of our success in treatment will be less if we depend entirely upon mechanical devices applied to the teeth.

Since my first case of Class I malocclusion, treated in 1904, there has not been an article published in the English language, so far as I know, that I have not read or heard of (and I may add that all very well-designed appliances have been practically used and investigated during this time). Throughout this period there has not been, to my knowledge, a single case of successful correction produced, meaning by this the correct alignment of maxillary and mandibular teeth in functional position, except where general body tone is improved by exercises; notwithstanding the fact that treatment has been carried on for years at a prohibitive price. Our excuse is that this failure is due to individual type and variation in form, which in turn is explained by any combination of circumstances an operator desires to use as an alibi.

If the guardians of orthodontic patients were informed of the uncertainty of our diagnosis and the results of treatment, I doubt the willingness of many to "blaze the trail" to an unknown destination. If we fail to acquaint them with the correct diagnosis, especially in glandular cases, our reputations are keenly at stake. There is, however, a middle ground upon which all would probably be willing to proceed—that is, to inform all concerned of our individual limitations.

Lately, a continental orthodontist[1] is recommending the use of septotomy, or the removal of interceptal bone between the roots of teeth which have been moved and the roots of adjoining ones, to relieve bone tension. This operation, he claims, assures retention of teeth in the position in which he desires them to remain. Upon careful examination of his illustrations, one can detect the line of vertical incision and also the scarred tissues ensuing. Will we be compelled to inform our patients of the necessity of this operation, or perhaps six or eight of them, in order to be assured of success in placing the teeth of Class I cases in harmony with each other?

Today, every operator must know at the beginning what the end-results of his treatment will be. This is accomplished by accurately kept records of previous cases, which indicate his ability to cope with similar conditions. Untrained operators may handle the situation by consultation with those seasoned men who are willing to sponsor the end-results of their students.

The development of bone, as described by James C. Brash in his madder-fed animals, and the investigations recorded by Dr. Axel Lundstrom, in relation to the so-called apical base and bone immediately above, contain much information applicable to making a diagnosis and training one's mind to visualize the possibilities of the extent to which one may expect a desired result. As I make this statement, I have in mind also all that Dr. Angle and his students have

written in relation to bodily movement of the teeth into their proper inclination. Probably no three investigators could be at greater variance. I fully realize what this statement contains. In explanation, I can honestly say that I have never seen a corrected case of Class I (having one tooth entirely out of alignment) where the investing tissue has not been mutilated, and in many instances irreparably destroyed, after many years of treatment. I ask myself whether the end-result in this pathologic state is worth what is paid in time and money in order to retain the full complement of teeth. We must admit that fallacies, contradictions, and imaginary results are rampant. Therefore, we must feel our way carefully toward a procedure which will be most satisfactory.

At the meeting of the American Society in Toronto in 1932, several papers were presented in the form of a symposium, which would amply cover this subject. In the symposium mention was made of every conceivable angle of diagnosis and treatment. Most of the writers and investigators of our day were quoted in part, and whether or not they were limited in their work to the treatment of Class I cases, as my efforts are here, we may accept all that was said with a feeling of pride and satisfaction that these gentlemen are our associates. The material presented at that time could be designated as "stepping-stones in the road of progress."

I feel, therefore, the necessity of avoiding repetition of this work, and since time is valuable, I shall not engage further in recalling the reports and investigations of other scientific men, all of which can be found recorded in our books, and from many of whom we have received gems of science in relation to orthodontia. I desire to attempt immediately to orient your minds to the investigations carried on in my practice during the last ten years in the correction of Class I cases through the institution of corrective body exercises and general body hygiene in order to stimulate the individual to the limits of inherent bone and muscle growth during the developmental periods, and while orthodontic procedures are being applied.

I have termed this prescription "the missing actuator," the definition of which is: to move or incite to action, influence, impel, compel, drive, excite, induce, lead, and many others.

It has been said that reforms are always attractive because they do away with evils. I shall answer this now by saying that I am not advocating any reforms, but I do hold out a promise of removing evils. After many years of observation, I can assure you that this promise is not a vague speculation. To impress upon the profession and the public an unfamiliar truth requires iteration and reiteration.

My subject has received considerable attention in certain ways, but so far as I know, has never been connected with the treatment that has been applied in the dietary and hygiene departments of institutions in our country, or by individuals who are vitally interested in diet and growth of the child in order to develop bone, prevent body illnesses, and tooth disease. Surely, all of you have read much in the last few years in relation to diet, and have heard a great deal about vitamins. Every dental journal, every medical journal, and newspaper

with which we come in contact has a tremendous amount of space devoted to reports of vitamin investigators. Therefore, I shall touch only upon the salient points of interest in this field.

Through the years of evolution, we evidently have not outbred entirely our monkey intestines, which require monkey habits to help them perform their daily functions normally.

I am sure you will agree with me that it is a fallacy to prepare food that costs much in time and actual expense only to give it to an individual who is not prepared to assimilate it properly. We therefore shall take up the subject of the correct preparation of the alimentary canal, in order that it will function as we expect it to function, and as it really does function in the state of health, and which, as a matter of record, will not carry on its work perfectly unless such preparatory measures are taken daily. The process of digestion and assimilation goes on without our knowledge, provided the nervous system and tissues of the digestive tract are in physiologic condition and *position*. The alimentary canal is outside the body; nothwithstanding it is contained within the body. There is a membrane separating the blood stream from the outside. In other words, the food passes into the canal and is rolled along in a solution of digestive fluids. If the internal membrane, which separates the food from the blood stream, is not in a *condition* and *position* to carry and advance this food properly in the process of assimilation, there is a disturbance. If this disturbance could be overcome by any method of exercise, our health troubles, including lack of bone growth and tooth disease, would be solved.

The most active tissue in the body is the blood. New blood made every day from fresh food prepared and distributed by the joint action of all parts of the body, including glandular and lymph systems, must be the necessary agent for resistance to disease in all parts of the body, including bone and teeth. Preparation of foods without correct distribution avails us nothing. If it is worth the trouble, expense, and time to prepare necessary vitamins in the form of food, then it would seem that some time and inconvenience may be spent to put the body in proper condition to receive it.

The residue of oxidized cells and food materials of the previous days, left within the body, contributes to many diseases and the lack of a responsive action when feeding vitamins. This residue applies not only to the contents of the digestive tract, but to the entire body. Diseases of children due to nerve strain and muscular tension are at times caused by the impoverished or poisoned condition of the blood stream which feeds the nerves of the entire body. Normal, healthy blood will take away the waste matter and correct the nervous influences to these parts.

What we need is an antidote to the hypothetic idea which generally prevails, such as "Oh, Johnny has a cold today. He will get over it soon as he always does." Or, "He has just one tooth to fill." These are only symptoms of mal-living and lack of proper preparation and position of the alimentary canal for the reception of food. The objection of most people to spending the time for proper preparation and exercise of internal organs in the morning, is that their state of health is good enough.

Before breakfast is the only time that correct preparation of the alimentary canal is possible for the reason that the entire living unit has rested for many hours and requires a cleansing, both inside and outside, which stimulates all parts into normal activity. Try as you may to eradicate by local applications all those catarrhal conditions of the head, sinus, and other chronic conditions, including lack of bone growth and diseased teeth, without proper exercise of the entire body, you can get nowhere. But when the proper morning system of hygiene is instituted, treatment of these cases, without exception, becomes successful and remains so. The human candidate for any illness is the one who arises in the morning and immediately attempts to eat breakfast without first taking at least one pint of water, which eventually fills more than one-half of the small intestine (about one hundred and thirty-six inches), and exercises to expel it from the stomach. We cannot scrub the digestive tract as we do the outside of our body; therefore, we must do the next best thing.

We have to admit the astonishing fact that both the outside and the inside skin (meaning the lining of the alimentary canal) under the influence of an intangible force so subtle that it did not attract the attention of medical science seriously until twenty-five years ago, are liable to work profound changes throughout the body: changes involving the circulation, pressure, and make-up of the blood, the activities of the glands, the building of bone tissue, and many other things.

The scene of this mystery keeps its secret well. But then our external skin, despite its obviously favorable situation for disclosures, has always been itself a mysterious affair, as every physician knows. Delicately sensitive, and yet able to stand extreme abuses, its ailments, when they occur, are stubborn and erratic. It seems to resent our strange treatment of it, which consists either of hiding it like something shameful, or displaying it like a gaudy ornament; whereas it is in reality a hard-working, self-respecting area that deserves a free and dignified position in our lives. We can live with half our stomach, half our lungs, half our kidneys, and on occasion, with half our brain, but if even *one-third* of our outer skin is destroyed, we die. It is needless for me to remind you that we do not consider the abuse of the inside skin, of which you all must have first-hand knowledge.

Clear, normal outer skin is an impossibility without perspiration or exercise, and it is an easy active index to the state of the digestive tract or internal skin of the alimentary canal. Gas from intestinal fermentation, which should not remain residual, most of the time cannot be expelled without proper exercise. This gas has greater ease of osmosis than food or digestive ferments, and is toxic to a great degree to the blood. Considering the so-called tired child, for whom rest is prescribed during the day—why should he be tired? Only because of the lack of morning preparation as mentioned.

I know of no disease which is not essentially internal. When it was first realized that diseases came from within, proper exercise of internal organs was appreciated. Some people claim to exercise but receive the same amount of benefit from their exertion as if they were reading the physical culture magazine, while others do not consider the exercise requirements important to the

internal organs actuated by nerves beyond our immediate control. The proper hygiene in the morning, when the stomach is empty, does continue its stimulating effect and influence the great part of twenty-four hours, and therefore it has an accumulative effect in producing and continuing body tone. In my daily practice, it is not difficult to isolate those patients under treatment who have adopted the correct morning body hygiene.

There are many instructors of body exercise, especially since the war, during which time much was learned about corrections of deformities and the rebuilding of bodies, even to the extent of remaking every tissue in the entire body during fourteen days of strenuous activity, and incidentally stopping tooth disease when exercise was continued in a modified way. When one visits most gymnasiums and sees the middle-aged and older men trying to rejuvenate by exercise, it does seem as though all our young people should take a lesson from them before they get that far, because the great majority start too late or after damage has been realized.

The use of exercising utensils or instruments is not necessary. They defeat the purpose of proper work. One must learn to constrict the muscles without weight. Very few children can be made to tense their muscles correctly until they are properly trained to do so. For this reason, the forms of movements that I shall suggest later are such that very little training is necessary, and results are obtained even if they go through the movements without much applied effort.

The most important items in the entire plan, as presented, are: the correct amount of water, the time it is taken, and its expulsion from the stomach. This is accomplished through stretching the entire body by hanging on a cross bar for fifteen seconds, and a floor exercise which completely empties the stomach. Standing on the head stimulates the spinal cord by pressure in the reverse direction and also the suspensory ligaments of all organs are exercised in a most desirable direction, thus assisting the water taken to pass through the colon.

I have with me a few cards that will be passed to you on which is described this method of body hygiene which has proved very successful, with no exceptions, in every case in which it has been faithfully adopted during the last ten years. It requires very little time and produces results.

The rest of my paper and the illustrations will explain the reasons for the character of movements and definite application of water both inside and outside of the body. The body is made up of about 75 per cent water. The Hindus believe that it is a vehicle to carry vitalizing power to the body. Water effects internal purification. It is easy to take. There seems to be nothing worth having that can be obtained entirely free of some cost, which in this case is not money but a little will power and resistance. The expulsion through the kidneys of the surplus water taken before breakfast should occur about two or three hours after it is taken. A great amount is expelled by the lungs and skin when it is taken into the stomach. The greater part of the water must pass into the large bowel, where it is absorbed. It conveys oxygen to the system and eliminates all kinds of waste matter. If we become dirty or unclean on the outside of our body, we bathe. The same condition or worse exists inside; therefore, we must do the same thing.

The morning bath should be started with slighty warmer water than that which flows from the cold water faucet. I explain to patients that it should be just off the cold temperature. First wet and wash the hands, then the eyes with the hands. *Never touch the eyes with cloth, sponge, etc.* Next wet the axillary spaces and medullar area of the neck, then the entire body in a standing position, and scrub all over with a bath brush, not too coarse. Rinse with entirely cold water, after which dry thoroughly. Temperature of the bathroom should not be below 70° F. The friction with the bath brush, which stimulates the sweat glands and lymph system directly underneath the epidermis, assists tremendously in the elimination process of both. Influence of exercise and pressure in the reverse direction on the spinal cord, the distance of movement of the organs, and the degree of exercise to suspensory ligaments, are vital to our health. The excuses for lack of this are "have not the time," "cannot be bothered," "too much trouble," or "to do so would be morbid and fussy."

Most people fail to realize the importance of the inside of their bodies. Below the surface is the greater evil, when it is out of function. Real self-health is within the person himself. It is a positive thing, radiating itself to others and affecting them by influence and example. It is the voluntary mind that must produce the correct physical action: *that* is common-sense living. Through this channel the correct influence is exerted upon the involuntary nervous system, which in turn affects all other systems, including the lymph, which has been cited lately as the one which is so intimately connected with bone and tooth troubles. Therefore, the wide-awake self continues to be the master and can stop tooth destruction and increase bone development without the assistance of free clinics and all other forms of sinful waste that are being carried on in the guise of scientific investigations and treatment. Dr. Mayo's remark of many years ago (so often repeated), "The next great step in medicine must come from the dentist" should have been changed to read "The next great step in medicine must come from the patient."

Scientific thinkers on this subject are blaming the associated professions of dentistry because they are not finding a panacea for bone growth and tooth destruction in the form of bottled bone-developer and anti-tooth decay; whereas this is a condition that can only be produced by the individual. The varied quantity and quality of susceptibility and resistance to disease in different people are tangible things which should be stabilized, standardized, and developed in a uniform manner by the public institutions and school systems for the promotion of health. It is timely that a few definite and decisive preventive measures were properly taught in the public schools by all interested professions, purely for the advancement of the coming generation, which is the only salvation to the happiness and continued progress of this great land and nation.

DESCRIPTION OF RADIOGRAPHIC SLIDES
(Barium Meal)

Fig. 1, taken shortly after barium meal, shows the outline of the stomach. Try to keep in mind its location in relation to the crest of the ileum.

Fig. 2 was taken immediately after the first picture, but with the patient reversed, vertically, or standing on his head. Note now the location of the stomach in relation to the

Fig. 1. Fig. 2.

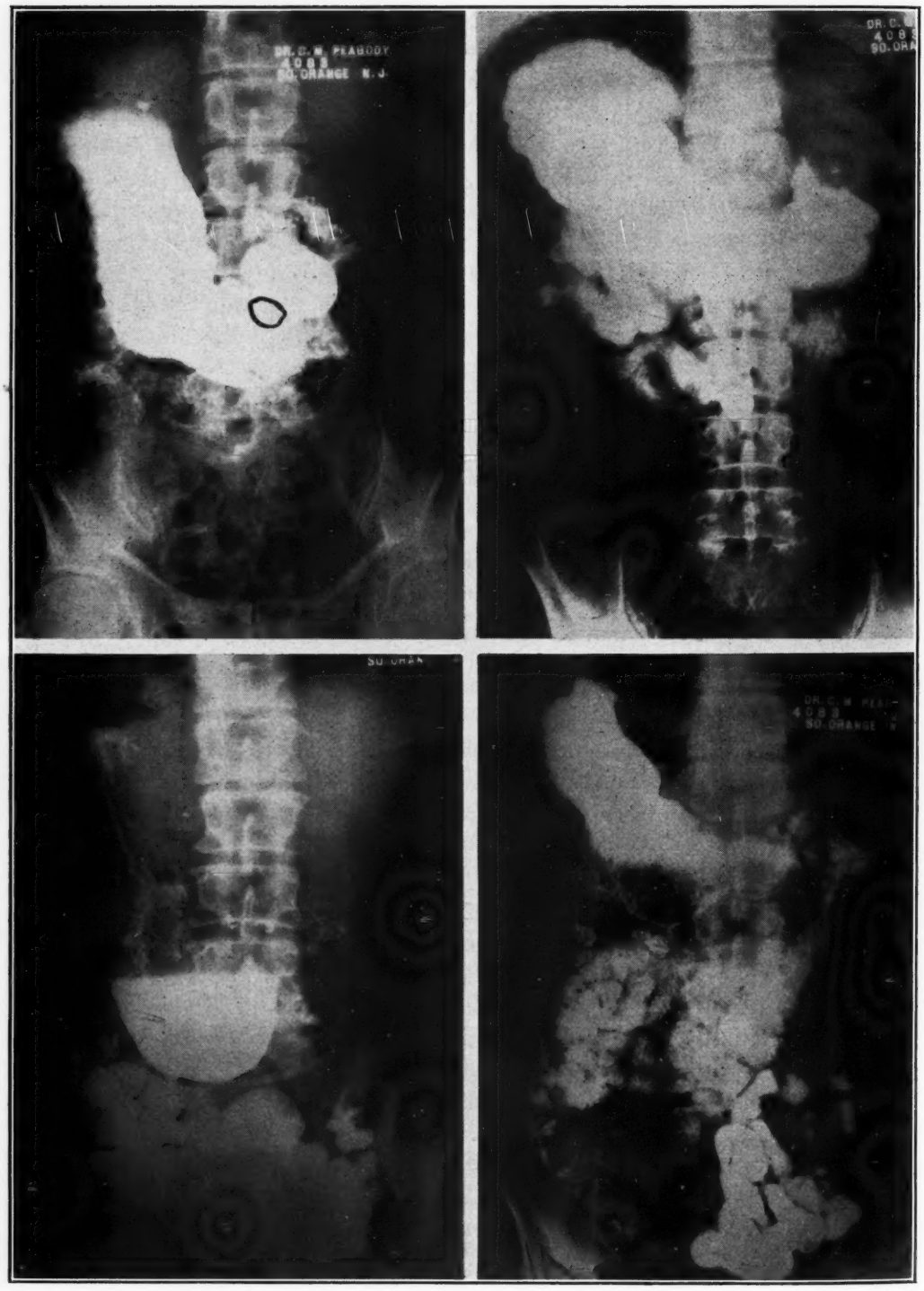

Fig. 3. Fig. 4.

crest of the ileum. Can you visualize what happens when you fill a stomach in the morning with water and go through a movement like this, and the effect it would have?

Fig. 3 shows the patient in the erect position, two hours after the barium meal was taken. Most of it has passed into the small intestines—note location. This picture probably

gives you a different conception than you had before of the location of this part in an average person. Most men believe it to be located much higher.

Fig. 4 was taken immediately after Fig. 3, with the patient reversed, vertically, or standing on his head. Note now the location of these organs in relation to the crest of the ileum. This tremendous movement facilitates the adjustment and strengthens all these organs, especially the suspensory ligaments, which many times are the cause of lack of assimilation of important foods.

Fig. 5 was taken in the erect position six hours after the meal and shows clearly the outline of the colon and some of the small intestines. This picture and the one to follow must convince you of the importance of correct daily attention to some method of hygiene and exercise, which, in my opinion, mean the same. Note the ileocecal valve—the spot that has given much anxiety to patients and parents. Can you, with this highly specialized spot, live even comfortably without the proper daily care? You can plainly see from the mechanics

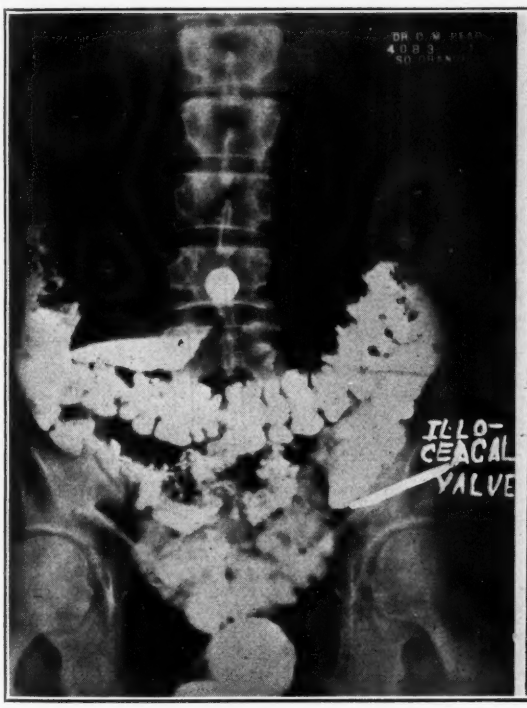

Fig. 5.

Fig. 6.

herein contained the reason for appendectomies. Look now at the circular constriction or rings in the splenic flexure, also in the hepatic flexure with the refolded twist. Do you think this person could be at all well and able to support himself if he did not daily wash and unravel these internal membranes of assimilation? And I mean by this without taking purgatives. Can you now realize what these chemicals must do in order to be effective? It was explained that it is not absolutely necessary to stand on the head. You can incline the body at a very acute angle in many different ways with the same results.

Fig. 6 was taken with the patient reversed or standing on his head, immediately after the last picture. Note the different flexures now. All are unravelled and made straight for the passage of material. Now picture the pint or more of water in this colon full of fecal matter being broken up as is sometimes necessary, being swished upward, the circular constriction being stretched and washed, and the feces softened and loosened and passed on to the sigmoid part. Could anything be more beneficial to the human than treatment of this kind? I have not shown in these radiographs an especially selected case. What I have

shown is a perfect example of 75 per cent of our people who have to resort to chemical relief. The remedy I have shown is a very simple and natural one and much preferable to drugs.

CASE HISTORY (SELECTED AT RANDOM FROM MY OFFICE FILES)

Fig. 7 shows the picture of a boy who was instructed to carry out this daily morning hygiene. He is the son of a physician specializing in pediatrics, and presented himself for treatment with Class II division malocclusion, also a severe catarrhal condition of the nasal passages and sinuses of the head. He used five or six handkerchiefs every day and was absent

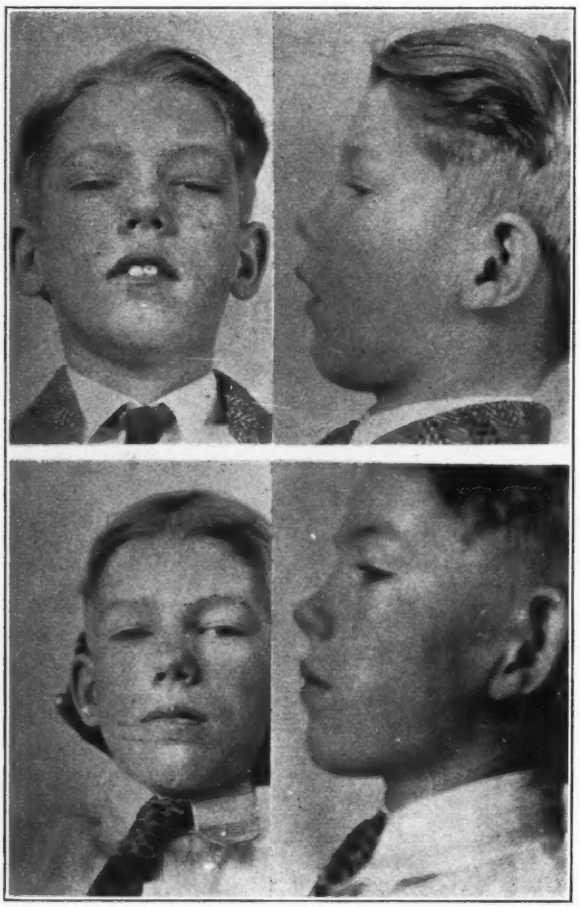

Fig. 7.

from school five or six weeks every term, much of this time being spent in bed under the attention of a rhinologist. His condition was complicated at times by stomach disorders.

Treatment.—He was given instructions to carry out the following plan of morning bath and exercises in the definite manner as described—each step to be done perfectly.

First—wash hands with cold water.

Second—use hands to wash eyes with cold water.

Third—brush teeth well, thoroughly rinsing mouth afterward.

Fourth—drink two glasses of water slowly (medium temperature).

Fifth—floor exercise ten times slowly and perfectly. Lie on floor with hands behind head, slowly raising body to sitting position without raising heels from the floor. Then, with arms at side, raise feet backward over head, touching floor with toes. Perform ten times.

Sixth—always bathe in standing position, wetting with lukewarm water (never use hot), scrubbing all over with bath brush and soap, rinsing thoroughly with cold water—dry thoroughly by rubbing with heavy turkish towel. (Temperature of bathroom 72°.)

Seventh—for breakfast every morning eat orange cut in six or eight pieces, raw cereal without sugar, toasted bread always and other foods as desired, excepting meat and sugar.

He was checked up each morning by a trained nurse in the household. The result is shown in the lower picture, which was taken four weeks after his beginning the morning routine, at which time the entire eradication of the catarrhal conditions had been brought about. No orthodontic appliances were used until this improvement had been achieved.

I wish to acknowledge the assistance of Dr. C. Maurice Peabody of South Orange, N. J., who so kindly took the radiographic pictures.

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DISCUSSION

Dr. Herbert I. Margolis, Boston, Mass.—Is that treatment suggested only in neutroclusion cases or should we do it in all malocclusions?

Dr. J. A. Gorman, New Orleans, La.—Dr. Spahn did not give any of his exercises. He spoke about them.

Dr. Charles A. Spahn, New York, N. Y.—I said in my paper that I have never seen a case in which the individual did not develop his bony and muscular frame to the greatest possible degree when correct body hygiene had been instituted.

I realize the work Dr. Rogers has done in the department of exercise, particularly of the facial muscles. This means something, but with general body tone it means a great deal more. I have used Dr. Rogers' local muscle and mandible exercises, and I made no progress. I then instituted a general body tone to bring that child up to the possibility of carrying on these exercises, with a greater degree of success.

We treat this subject as if it concerned just a few muscles in the oral zone, whereas the same blood goes through the nose, eyes, and ears. If you treat from the standpoint of blood, then I doubt very much that you will have many failures with Dr. Rogers' exercises. I believe they will do everything he says they will.

I have never seen a perfectly corrected case of Class I malocclusion. In these particular cases the bone needs development; the bony frame is so small, with the apical base so constricted, that there is no room for the correct position of all the roots. One cannot continue treating these cases seven, eight, nine, ten, or twelve years at a prohibitive price. Let the patients do something. Let them help to develop the bony structure if they intend to have a proper set of teeth.

In Class II cases, it is a simple thing. It is not difficult to correct Class II cases with appliances and just a little bit of exercise. The bony frame seems to be there in most cases. There is a base, and there are not so many teeth out of alignment. Where the arch forms are mostly good, with a little expansion and adjustment the case usually improves. Take away pernicious habits and it will be a simple thing to correct any case of Class II.

Class III is in a class by itself, and I shall not discuss that.

In relation to the form of exercises, I have some little cards here that I hand to my patients and their parents, and I explain to them what they have to do if they expect a result. I tell them that if they do not do this, I cannot promise them anything; but if they

conscientiously follow this throughout the period of treatment seven days a week (I do not mean four or five days a week), I can almost guarantee a result in bone growth in Class I cases.

Class I malocclusion is not a local affair by any means. It is an entire body picture. It is the picture of the intestine trying to feed vitamins to a child who is unable to absorb them. What do you know about the inside of this particular child you are trying to give vitamins to? Have you seen the picture? Do you know whether there is an anatomic disturbance, malformation, or unnatural structure? This very often is the case.

I believe every child who goes to a public school should be made to have a radiographic examination of the viscera. One cannot radiograph the brain to determine mental ability, but the digestive system can be radiographed in order to determine whether the child is capable of going on.

You do not have to tell your stomach to digest, as all the organs inside carry on in an involuntary manner. All you have to do is to have a balanced nervous system, and the stomach will do its work. A patient could not live with convolutions as in Fig. 5 without the proper exercise.

I have yet to hear the first remedy offered by a surgeon for the prevention of appendicitis. We talk about preventing teeth from decaying, but I do not know of any remedy that any family physician has instituted in a family with four or five children, in moderate circumstances, to prevent appendicitis. Nor does he tell how to ward off subsequent attacks, which they frequently have after the appendix has been removed.

The last report on monies spent for proprietary preparations to activate the alimentary canal was one hundred and ten million dollars.

THE CRISIS IN ORTHODONTIA*†

PART I

2. TISSUE CHANGES DURING RETENTION. SKOGSBORG'S SEPTOTOMY

ALBIN OPPENHEIM, VIENNA, AUSTRIA

(Continued from page 554, June)

Up to this time all data concerning the necessity for a certain period of retention have been very vague and indefinite: "Retention must be maintained until functional reorganization of the bone has taken place" (Oppenheim). This rule, which gave no definite data, was of little value. The only thing that was evident is that the time of retention is just as individually different as is the time of active movement and the forces necessary for the individual cases: "Age, constitution, race, type of anomaly, time of active treatment, kind of appliances used, will have to be considered."

I have also emphasized that we are not justified in drawing definite conclusions from the histologic findings in monkey's teeth as to the changes in man's, as far as the time of retention is concerned, because the span of life of a monkey is much shorter. Therefore every removal of the retention appliance means a certain risk.

From the last report of Marshall[2] we have found a way of measuring the approximate time of retention; the figures that were found by this author by his comparative study of the teeth of monkey and man coincide with the conditions found in practice. If the findings of Marshall are corroborated by controls and by comparison with other kinds of animals, his investigations will mean an important contribution to the problem of retention. From his investigations of the time of calcification and eruption of the teeth in macacus rhesus and by comparison of these data with human findings, Marshall came to the conclusion that any particular period in the life of a monkey would have to be multiplied by five for a corresponding time in the life of man, or, in other words, that one month in a monkey corresponds to five months in man.

In my experiments the period of forty days during which the anterior teeth were moved labially would correspond in man to a period of two hundred days or approximately seven months; the five-day interval between the renewal of force would correspond to twenty-five days in man. A period of retention of six months in monkey, corresponding to thirty months or two and one-half years in man, has been found in my specimens to be *insufficient*

*From the Department of Orthodontia of the Dental Institute of the University of Vienna.

†Translated from *Zeitschrift für Stomatologie*, Nos. 7 and 8, 1933, published by Urban and Schwarzenberg, Vienna and Berlin.

to restore the architecture of the bone back to normal, even if the functional stimulation is not restricted. The requirement of "overcorrection and of long-time retention"[11] which I have always advocated for extensive movements, and particularly for rotations, seems justified; the time necessary for such procedure is at least two and one-half years, provided that there is full functional stimulation.

Marshall's data are now being checked in our own institution; so far the results of this check-up have brought forth only the one result, that his definite figures concerning the relationship between animal and man have to be regarded with considerable skepticism.

Retention is the most difficult problem in orthodontia, in fact it is *the* problem. Everybody can move teeth, and with almost any kind of an appliance; however, to be able to move them according to a definite plan and diagnosis and in a biologically correct way is by no means common knowledge, and these two factors are certainly responsible for a large number of our successes or failures.

Generally we hear the complaint that "in all orthodontic movements the teeth have a tendency to move back into their original position," and "that there is uncertainty just when this tendency has expired and when the removal of the retention appliance will be crowned by full success." Often it is stated that "the problem of retention is still an unexplored field of which we know very little," and we hear the discussion of whether retention is necessary or avoidable. These problems have been mentioned over and over again until the situation reached the point where an experienced orthodontist made the statement (mentioned by Hawley[10]): "If any one would take my cases when they are finished, retain them and be responsible for them afterward, I would gladly give him half the fee."

Despite correct interlocking of the cusps, which seems to be a good mechanical aid to retention, despite a normal arch, despite discontinuation of habits, such as pillowing (Stallard), there are still so many factors of entirely unknown nature involved in the achievement of permanent success that each minute, new contribution to our knowledge of how to obtain such a success and how to avoid relapses must be considered of great value. Since we are not yet in a position to lay down a definite plan of procedure which will help to obtain permanent results and avoid relapses, all we can do is to report our experiences, but we must not make the situation more difficult by making statements that are not supported by actual proof. Personally, from the findings shown in this article and from the lack or scarcity of permanent successes without retention so far reported in orthodontic literature, I am not enthusiastic about the idea of discarding retention. My procedure to insert intermissions during the active treatment has in many cases been very successful; although sometimes during these intermissions there was a slight relapse, particularly in rotations and in corrections of upper protrusions, but these same cases frequently gave the best permanent results after treatment had been carried out to the end and the case slightly overcorrected.

I cannot agree with Mershon that a relapse of teeth that are left without retention is invariably a proof of too rapid or too powerful a procedure and

that every necessity for retention means the failure of the case. Overcorrection in every case of correct orthodontic movement is essential for permanent success (Strang[11, 12]), "Deformities should be overcorrected to allow for tissue 'comeback'; . . . overtreatment of most malpositions of the teeth is an excellent rule to observe. . . ."

A form of retention which allows physiologic movement within wide limits and which, while preserving the real purpose of the retention, does not interfere with the stimulus of natural factors is, according to my opinion, necessary and will be necessary until the bone which has been artificially oriented during the time of active treatment has become reoriented to a normal functional arrangement.

If Lundström has seen relapses in some cases even thirteen years after active treatment had been finished in such cases, we cannot hold responsible the original factors that caused the anomaly, but those "unsuspected and little understood influences which may ultimately assert themselves more or less to the detriment of the ideal the orthodontist has so valiantly striven to produce" (Gray[13]).

It is also possible that we are dealing with factors of entirely unknown nature which would just as well cause changes in the position of teeth or groups of teeth in ideal dentures that had never been subjected to orthodontic treatment; however, these changes would be considered as relapses had there been orthodontic treatment.

Mershon emphasizes in some of his papers and again in one of his most recent letters to me that he has not used a retention for twenty years, because retention appliances counteract the very purpose which they are supposed to serve, since they *do* retain and thus make the functional adaptation of all associated parts and tissues impossible. This same thought is expressed in many publications of Mershon. He states that retention in the usual sense no longer has a place in orthodontic literature but is merely a confession of having created disharmony, and that the use of retention appliances in itself indicates a failure.

These quite revolutionary thoughts and statements would actually solve *the* problem of orthodontia, if they stand the test of time. The solution of this orthodontic problem depends, of course, strictly upon Mershon's therapy of long intermissions and renewal of force at intervals of many months; it depends upon a treatment that is extended over many years. However, since the consent for such a long treatment depends not only upon the dentist but also upon the patient or his parents, this means a great obstacle for many. As long as we carry out our treatment in a relatively much shorter time than Mershon, and as long as we use gentle intermittent forces with occasional longer intermissions and thus closely imitate the biologic changes, and incidentally, also Mershon's procedure, we still move the teeth faster than in natural growth; therefore, we need retention. *Retention must allow the spicules of bone, which under the influence of the orthodontic force have been arranged at right angles to the tooth surface, to become rearranged parallel to the surface of the tooth, thus corresponding best to the forces created by normal function.*

If, during the time of active treatment, there has been normal transformation of bone by gentle intermittent forces, then a retention appliance that does not interfere with normal functional will not disturb the repair of the disturbed tissue equilibrium and of the minor tissue injuries that are always produced by our operations.

The retention, if it is to be successful, must be performed under certain indispensable conditions. It must allow for full functional rearrangement of the bone and for an individual adjustment of teeth and jaw in the newly created position, in accordance with the play of the muscles and with the peculiarities of the skeleton. We have to consider the preservation of the individual type, which we will never be able to change, despite the fact that we might obtain an ideal occlusion. This type sometimes does not become apparent until many years after the treatment has been finished, frequently at the time of puberty; thus an orthodontic result, which was satisfactory from an esthetic view point, is frequently offset or at least impaired by the "dominance of the type."

The arrangement and transformation of the bone by means of endogenous forces is the basic idea of Mershon's principle, and it is certainly the most correct procedure to let the forces of nature do the major part in the orthodontic treatment, because these forces, which we shall *never* be able to comprehend completely, adapt themselves to the individual conditions and needs.

But even if one adheres strictly to Mershon's principle, it is not yet sufficiently proved that retention can be entirely omitted; individual cases and individual results are not sufficient basis for a general principle.

Although Mershon has had more than 3,000 cases of his own, only a few of his clinical records are obtainable, and these few do not give a sufficient idea of the practical results of his method. (I emphasize the clinical side of Mershon's activity, because most of that which is done in Europe under the heading of "Mershonism" is something altogether different.)

If one analyzes only the more extensive report of Mershon's in which finished cases are shown two to five years after treatment,[14] one finds only very few cases which would fulfill all requirements of the ideal outcome of orthodontic treatment; the mesiodistal relations of the jaws in Class II cases especially present a condition (end-to-end occlusion) which can by no means be considered an ideal end-result and which, according to Angle's diagnosis, would call for further treatment. Also the important, correct position of the permanent canines is frequently far from perfectly obtained. But this report also shows some very difficult cases which have been treated with excellent success and which have been free from relapse, without the use of any retaining appliance.

I fully recognize these great and accepted advantages of Mershon's basic principles which I always apply in my practice. However, I have been able to confirm the basic idea of Mershon's, that the main treatment should be left to nature and that such treatment does not require any later retention and does not involve the danger of a relapse, only as far as the correction of the com-

pensating curve is concerned, as I have shown in the case illustrated in the first chapter of this paper.*

A. M. Schwarz,[15] in discussing Mershon's work, criticizes Mershon for his statement that cases can be left without retention, because Schwarz believes that in the long intervals between the renewals of the force the passive finger springs act as a retention appliance. Schwarz considers this repeated retention of the tooth in an intermediate position dangerous and unfavorable, since during these intermissions new bone is formed, and the latter is harmful to the cementum when the force is renewed. I have shown in the first chapter that this opinion of Schwarz is not correct, and that the osteoid which has been formed during the intermission is in reality not harmful to the cementum.

Since A. M. Schwarz, in enumerating the advantages of the lingual arch, mentions "the advantage of working with the lingual arch is still increased by the fact that, as a rule, no retention appliances are necessary," he should have proved this statement with some clinical material which is beyond any criticism. What Schwarz shows in his report is something that is basically different from Mershon's procedure. He used Mershon's name for something quite different, although he always states that movement with very gentle forces and of long duration greatly reduces the danger of relapses. What Schwarz shows are records of speed in treatment, and to prove the correctness of his above-mentioned statements, it would be necessary to show these cases *after they had been left without retention.* Since the publication of these cases more than two years have passed, which would have been time enough to prove his statements as to the possibility of omitting retention in his cases, in some of which extensive movements had been carried out within two and one-half months.

Korkhaus,[16] in full recognition of the situation, is somewhat more conservative in his statements and assumes a more skeptical attitude: "At present we cannot yet decide whether Mershon's opinion that retention can be omitted will be corroborated by practical experience, or whether it is true only for certain anomalies or for treatment during certain developmental periods, whereas other anomalies present particular danger of relapse and will always require an extensive retention. All these questions cannot yet be answered."

Generally speaking, most of the leading authors are convinced of the necessity of retention (Angle, Case, Dewey, Hellman, Izard, Lischer, McCoy, Ottolengui, Strang, Quintero, Herbst, Kantorowicz, Korkhaus, Kranz, Oppler, Pfaff, Simon, Walkhoff, Winkler). However, there is a general tendency to shorten the time of retention.

It is impossible to show the best form of retention for all possible movements, both simple and complicated. Just as for the active treatment, only roughly outlined general rules can be given which require individual modifications for each particular case; also for retention there are only standard rules which can rarely be applied without change or modification to fit the case. There is only one main rule, the basic principle of which is: *no absolute rigidity of the appliance.* The more rigid the appliance, the more it eliminates functional influence, the more certain is the failure. Retention by rigid fixations

*INTERNAT. J. ORTH. 20: 464 (Figs. 31 and 32), 1934.

or splints or by bands that are soldered together, such as illustrated by Schwarz in Scheff's *Handbuch*, are out of the question. A few main types of "movable," but not "removable" retention appliances will be shown in the chapter dealing with appliances.

A good method, and one also recommended and followed by Strang, is in the beginning to use a lingual retention attached to the molar bands. This appliance is later replaced by the vulcanite plate, the use of which is gradually restricted. Such appliances should not be used on unreliable patients who break or lose removable appliances. But it is necessary to explain even to very responsible children that they should never wear the appliance when going swimming, because it frequently happens that in spitting water from the mouth, the appliance is inadvertently removed and lost.

We find in Angle's writings a few statements about retention which are just as correct today as they were thirty years ago: "After malposed teeth have been moved into the desired position they must be mechanically supported until all of the tissues involved in their support and maintenance in their new positions shall have become thoroughly modified, both in structure and in function, to meet the new requirements. It cannot be too strongly insisted upon that the permanency of the teeth in their new positions cannot be hoped for, regardless of the length of time the retaining devices have been worn, unless such occlusion has been established as will enable the inclined planes of the cusps to ultimately act in perfect harmony for mutual support, which also means perfect harmony as to sizes and relations of dental arches." "It must also be borne in mind that unless the causes which have been operative in producing or maintaining malocclusion be removed or modified, the establishing of permanent normal occlusion can rarely be hoped for."

This principle for the period of active treatment which Angle laid down as far back as 1900 should, however, constitute *only a restriction of the tendency of the tooth to move back to its old position.* The requirements of esthetics and of hygiene have to be considered very carefully. The latter requirement is best fulfilled by the use of removable appliances.

One safety factor in the prevention of relapse is a *slight overcorrection of every movement* and particularly the investigation and—if possible—elimination of all causative factors (habits, mouth-breathing, etc.).

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(To be continued)

TREATMENT OF A NEUTROCLUSION MUTILATED CASE*

FRANK NASH, D.D.S., SCRANTON, PA.

THIS patient is a girl; she was nine years of age at the time of presenting for treatment. It was found upon examination that all lateral incisors and all second premolars were missing as well as both maxillary second molars. In addition there was a marked rotation of the maxillary first molars. The maxillary canines were found in the palatine portions of the maxilla with the tip of the cusp in each case almost in contact with the apex of the root of the central incisor teeth. The mandibular canines were imbedded in the anterior portion of the mandible with their cusps approaching one another, as shown in the x-ray pictures in Fig. 2.

Proposed Treatment.—It was decided to rotate the molar teeth to their normal position; to leave all deciduous teeth in place with the exception of the maxillary deciduous lateral incisors. After bringing both maxillary and mandibular central incisors together, a portion of the crown of each canine was to be exposed. Then the canines were to be placed in position next to the central incisors, letting the deciduous canines occupy the space normally occupied by the permanent canines. The reason for this was to conserve those deciduous teeth which were present and by utilizing the canines in the place of lateral incisors to eliminate, as far as nature might permit, the need for artificial teeth in these areas.

Treatment.—Angle bracket bands were placed on the maxillary and mandibular incisors, 0.020 inch round wire loop spring with ends soldered to small sections of ribbon arch wire was placed and the space between the incisors was closed. Sections of ribbon arch wire were used in the ends of the round wire to prevent the spring from rotating labially. After these spaces were virtually closed a lingual arch appliance was constructed for the maxillary arch and contoured anteriorly to permit an auxiliary wire to be attached over, first, the right canine and then the left. The right canine crown was exposed under local anesthesia and the area packed with a mixture of zinc oxide and eugenol. The lingual arch was inserted with auxiliary wire extending over the zinc oxide and eugenol packing to maintain it in position.

At the end of two weeks, the lingual arch was removed, the packing likewise; then a plaster impression of the exposed portion of the canine was taken; the area was again packed with zinc oxide and eugenol and the lingual arch replaced. A gold casting was then made from the impression of the canine. A small eyelet was soldered to the casting, and about four days later upon the removal of the lingual arch and the packing, the casting was cemented in place. The next day the lingual arch was replaced with an auxiliary spring attached

*Presented at the Thirty-Second Annual Meeting of the American Society of Orthodontists, Oklahoma City, November, 1933.

to it, designed to draw the canine down, and this auxiliary spring was ligated to the casting on the canine with 0.008 inch ligature wire. It was adjusted at intervals of about three weeks.

Three months later, the maxillary left canine was opened in the same manner and the same procedure carried out. At the time of exposing the maxillary left canine, the maxillary right canine was not anywhere near its destined position. A month after exposing and starting the maxillary left canine down, a labial appliance was made for the mandible, and the mandibular right canine was first exposed in the same manner as described for the maxillary canine with the exception that the auxiliary wire was attached to the labial wire since no

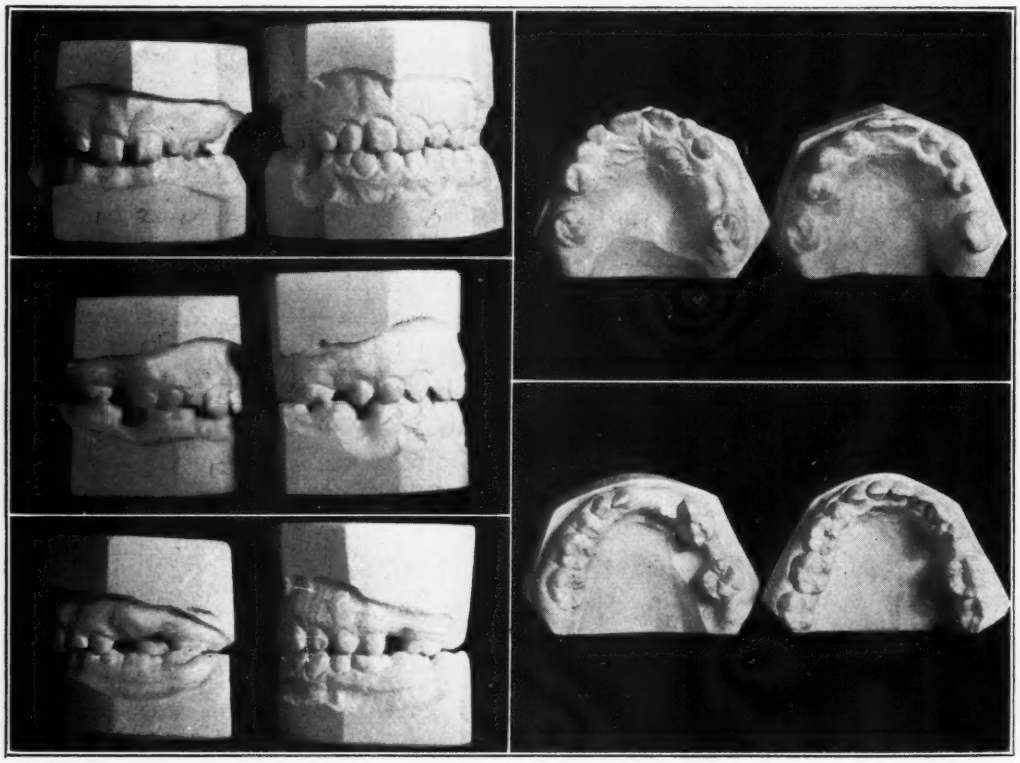


Fig. 1.

lingual arch was in use on the mandible. The procedure in drawing up the right mandibular canine was identical with that for the maxillary canine with the exception, of course, that the auxiliary spring was attached to the labial wire.

About six weeks after cementing a cap on the mandibular right canine, the mandibular left canine was exposed and the same procedure followed out with that. This mandibular labial wire was 0.040 inch in diameter and extended from the mandibular first molar on one side to the mandibular central incisors which were held in place by a section of ribbon arch. This heavy labial wire was adjusted at intervals of from three to four weeks to produce a rotation of the mandibular right first molar. Likewise on the maxillary lingual arch, ad-

justments were made to carry on rotation of the maxillary first molars, all of this being carried on while using these base wires to bring the impacted teeth into position.

Treatment was started in January, 1929, and concluded in April, 1932. Figs. 1, 2, and 3 show the models and x-ray pictures of the case before treatment and fourteen months after concluding active treatment. The patient has been wearing a removable retaining device on both maxillary and mandibular arches.

Fig. 2.

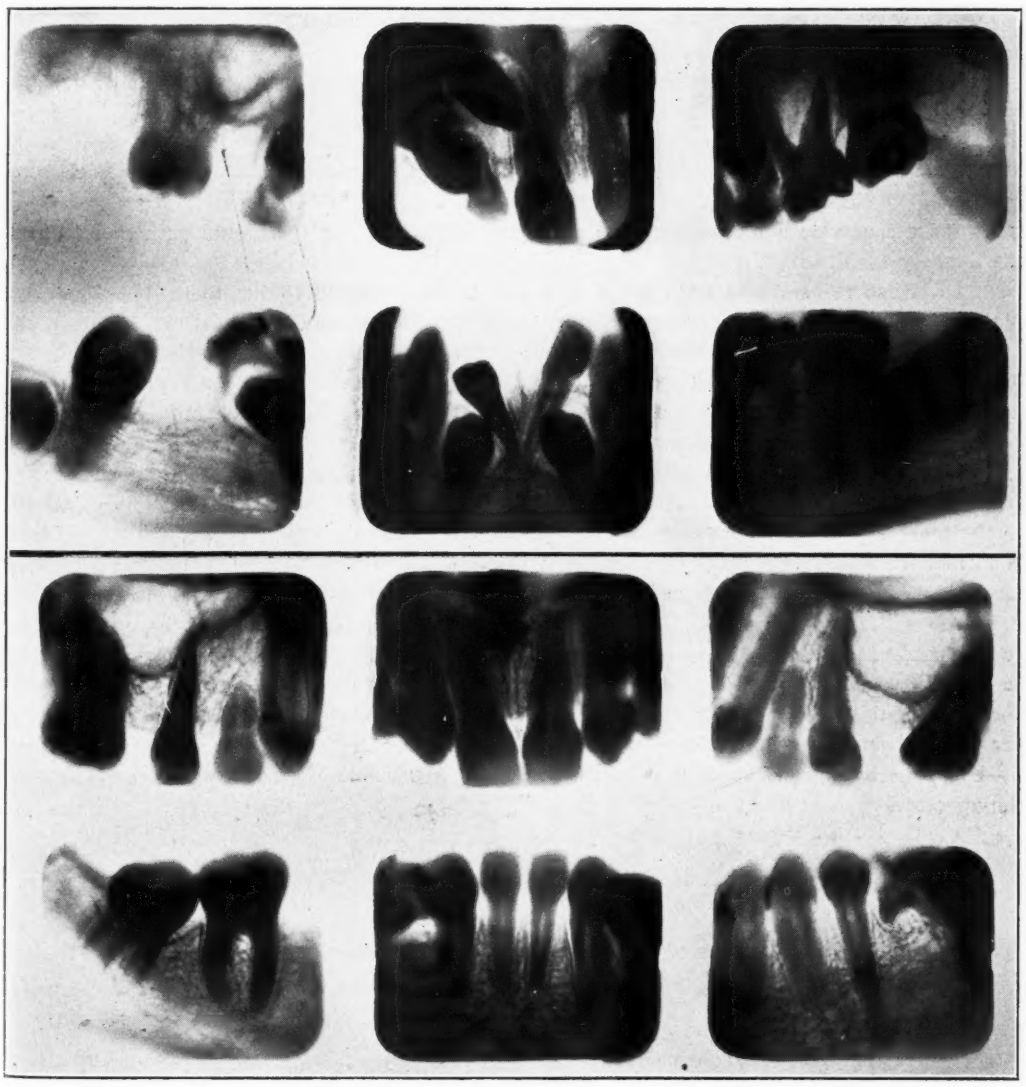


Fig. 3.

DISCUSSION

Dr. Arlo M. Dunn, Omaha, Neb.—I would suggest that a number of radiograms be taken from several positions to determine the location and the true relationship of the impacted canines with the surrounding teeth. This information is an aid in determining the location of attachment so that force may be applied in the proper direction. Radiograms should also

be taken as the case progresses, at intervals of about two months, to denote movement and progress.

Dr. Nash has dealt with the esthetic reason for bringing these teeth into their proper positions. I should like to add that the canine teeth seem to resist decay and usually are about the last teeth to be lost. Because of their prominent position in the arch and because of their large roots they are very important in middle life, or later when bridgework or some type of removable appliance is required. The presence of impacted canines may be a predisposing factor to nervous disturbances. These reasons justify the time, money, and effort required to move them to their correct positions.

Great care must be exercised so that in removing the bone around the impacted tooth no damage is done to the impacted tooth or the adjacent teeth. I recall very clearly a case where the sharp chisel of the exodontist caused the tip of the canine to be cut off when his assistant malleted with too much force.

The flap made to uncover the impacted tooth is not sutured in the same way as though the canine were to be removed. Instead of bringing the tissue together, a large portion of the flap is cut away over the tooth to prevent healing of the tissue over the impacted tooth. This seems radical, but it certainly works well and gives the operator a better vision of the field. If the hook should come loose, it is much easier to recement it. Dr. Nash suggests the use of zinc oxide and eugenol after the operation. This prevents pain and reduces the liability of infection.

Dr. Nash recommends the casting of a cap to be cemented to the tooth, but I usually place a hook at the time of operation by cementing it into a small hole drilled in the tooth. If the patient is extremely nervous or for some reason nerve block anesthesia is not indicated and nitrous oxide and oxygen is used, the hole is drilled while the patient is still under the anesthetic. If nerve block anesthesia is used, the hole is drilled and the hook cemented at the time of operation.

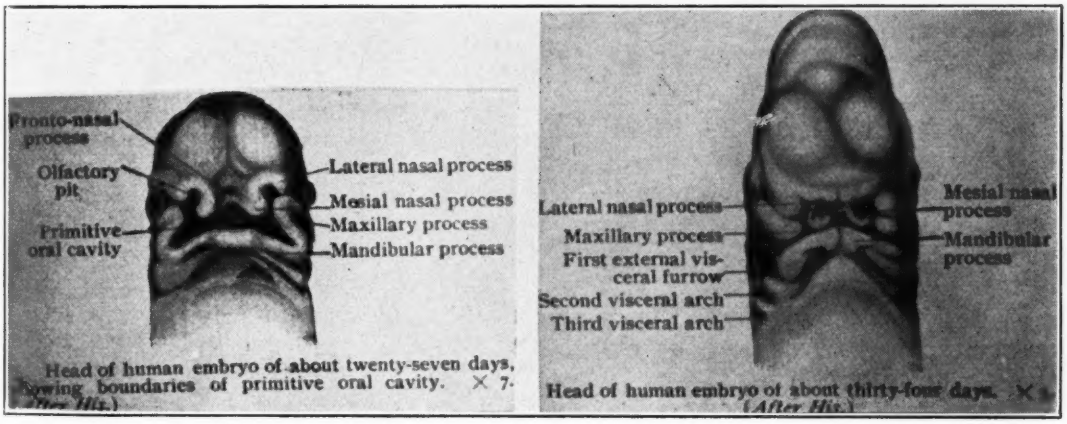
Some operators shape a piece of fine wire into a concave coil, which has a small projection with a loop in it so that it may be ligated to the appliance. This coil is cemented to the tooth somewhat in the same manner as though a cap were to be used. This procedure is to be commended because it is a conservative method and seems to do the work well. This also works in cases where the position of the tip of the tooth is not easily approached.

After the impacted canine has been moved so that the crown projects beyond the tissue, a band or a cast cap is made and an attachment placed at a point closer to the gingival so that increased distance between the attachment on the tooth and the appliance is secured for additional movement. By doing this it is possible to move the tooth completely to its proper position with all the force exerted by an appliance in the same arch. The appliance used may be lingual or labial at different stages of treatment, depending upon the choice of the operator.

CLEFT PALATE FOUND IN ONLY ONE OF IDENTICAL TWINS*

HARRY BERNARD WRIGHT, D.D.S., PHILADELPHIA, PA.

AT THE present time, the etiology of cleft palate is unknown, a separate interpretation, embryologically, being necessary for each anomaly of the mouth or palate. The following embryological discussion is taken from Dorrance and is the explanation at present most generally accepted. "The first branchial arches give rise to the mandibular processes on each side of the body. These proceed forward and fuse in the midline to form the mandibular arch which bounds the stomodeum or primitive mouth. The maxillary processes appear at about the end of the fourth week of intrauterine life as budlike projections from the upper



A. *B.*

Fig. 1.—*A*, Head of human embryo of about twenty-seven days, showing boundaries of primitive oral cavity. Maxillary processes appear about this time as budlike projections from the upper aspect of the mandibular arch.

B, Head of human embryo about thirty-four days or six weeks old. The maxillary processes proceed forward to meet the lateral nasal element of the frontonasal process, with which they fuse to form the anterior nares and later the palate. Failure of these structures to fuse results in the formation of cleft palate.

aspect of the mandibular arch. They proceed forward to meet the lateral nasal element of the descending frontonasal process with which they fuse at about the sixth week of intrauterine life to form the anterior nares. (Fig. 1-*B*.) Further anterior growth culminates in fusion of this process, at about the seventh week, to form the palate. Failure of this union will produce splits of the jaw which may be unilateral or bilateral with projection of the premaxillary bones. Arrest of development at any point behind the alveolar ridge determines the extent of split of the palate. In split palate, the premaxillary bones of man are formed by the two globular elements of the frontonasal process. These elements supply that portion of the palate anterior to the incisive fossa and mesial to the canine

*Presented at the Thirty-Second Annual Meeting of the American Society of Orthodontists, Oklahoma City, Okla., Nov. 8-10, 1933.

teeth. The split in unilateral cleft palate runs between the canine and the second incisor. The first maxillary incisor is borne by the globular process, while the latter may be attached to it or cast into the split. This explains the erratic position assumed by the second maxillary incisor in this case. The rudimentary canine or 'pre-canine' sometimes seen external to the cleft and mesial to the canine in certain cases of jaw splits is a supernumerary tooth.''

The subject of this report is a male of mixed ancestry, being the fourth generation in this country; he is one of so-called ''identical'' twins, the attending physician's affidavit to the fact that only one placenta existed. The patient had a single completely cleft palate, extending from the palatal pharyngeal region through the alveolus, between the canine and the second incisor on the left side, into the nares, complicated with complete harelip and split ala nasae. This split was believed to be traumatic. (Fig. 2.) The brother was of the same weight but had no deformity of the body whatsoever. A search through medical and dental literature does not reveal any other case reported.

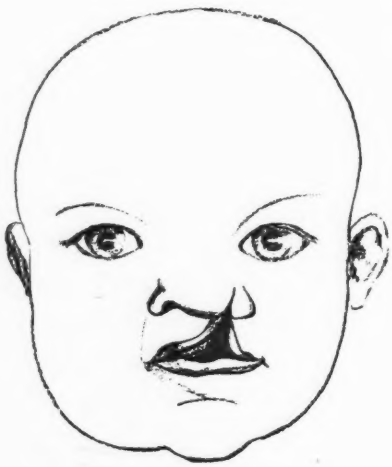


Fig. 2.—Drawing of infant as he appeared at the time of the first surgical operation, at the age of two months and sixteen days.

History.—Patient born 1907 of normal parents of good health and antecedents, both of whom are living. Fig. 2 shows a drawing made from a description of the condition, just prior to surgical operation; no photograph was taken at that time. Patient had diphtheria and tonsillitis in infancy, but no other illness. At two months and sixteen days, the Brophy operation of uranoplasty was performed, by forcibly compressing the separated maxillae by means of silver wires which were forced through the alveoli, retained by means of lead plates and twisted until the maxillae were approximated. Brophy labored under the impression that a split palate ''is a fissure, a separation of well-developed parts; not, with rare exceptions, the result of arrested development, not failure of the normal quantity of tissue to enter into its structure.'' Four subsequent operations were necessary to close the lip, alae nasae and sutures in the palate. Brophy justified himself in performing this operation at this tender age on the hypothesis that ''the bone at birth contains one-half organic matter and that the upper jaw broadens in cleft palate to the extent of the width of the cleft.''

Dorrance says of this procedure: "Forced pressure applied upon the separated maxillae, a violent pressure used in forced compression by passing wires across the bones and placing lead plates as done by Brophy and his following, is a very formidable procedure, accompanied by serious deformity of the maxillary

Fig. 3.

Fig. 4

Fig. 5.

Fig. 3.—Casts made when patient was eight years old, when orthodontic treatment was instituted.

Fig. 4.—Casts made in 1924, at the end of the four-year rest period. Note lack of development of left maxilla and presence of two supernumerary teeth in left palatal process.

Fig. 5.—Casts made in 1925, when patient first presented himself to the writer.

portion of the face, exfoliation of the tooth germs and considerable distortion of the dental arch.'' The same views of this operation have been expressed by Stone, Sir James Berry, Sebileau, Helbing, Goyder, Legg, Drachter, Blakeway, E. Thompson, Ruppe, Veau and others. This discussion is necessary in order to understand the nature of the corrective treatment which follows. At five years of age, the patient was referred to another surgeon for the surgical closure of an opening 1 by 1.5 cm. at the junction of the hard and soft palate.

Following are the records taken from this surgeon's files: November 19, 1912, St. Luke's Hospital. Lateral incisions extending from first molar 1 cm. behind last tooth. Could not determine if posterior palatine artery had been preserved. Flaps loosened very freely. Borders of hole excised and defect approximated with two mattress sutures and one deep suture.

November 25, 1913, St. Luke's Hospital. Defect in palate cauterized with actual cautery.

November 21, 1914, St. Luke's Hospital. Cauterized small defect in posterior part of palate.

March 8, 1915, St. Luke's Hospital. Cauterized small defect in palate.

Oct. 9, 1924, Barnes Hospital. Plastic operation on lip.

June 16, 1925, Barnes Hospital. Plastic operation on lip.

Fig. 3 shows several views of casts of the teeth made at this time. In 1915 when patient was eight years old, orthodontic treatment was instituted. Two years later appliances were removed. Patient was placed on a rest period, free of all appliances for two years. In 1919, a pin and tube appliance was adjusted to the maxillary teeth. Six months later, a removable lingual round wire appliance was adjusted to the mandibular teeth, and the maxillary appliance was removed. Several months later, the mandibular arch appliance was removed and the case placed on a rest period for four years.

On September 15, 1925, the patient was referred to me because of change in educational institutions.

Fig. 4 shows casts of teeth, made in 1924 at the end of the four-year rest period.

Fig. 5 shows casts made at the time I first saw the patient, in September, 1925. Examination of the teeth revealed the following: A pin and tube appliance was adjusted to bands on the maxillary first molars, right canine, first and second incisors. This appliance was removed.

Fig. 6 shows radiographs made of the maxillary structure. The maxillary right second incisor had a root filling but the area showed no rarefaction. There appeared to be no bony union in the region of the cleft. The left maxillary deciduous canine occupied a position anterior to the second premolar, which premolar was badly rotated. In the left maxillary process, the permanent canine was in a palatal position, opposite the second premolar, totally imbedded and absent from view. Radiographs showed the presence of this canine and relative positions of two supernumerary teeth, seated within the same area, the supernumerary teeth having erupted. The radiographs also showed the arrest of de-

velopment of the root of the left second incisor, together with the lack of alveolar support to this tooth.

The patient complained of symptoms similar to those of sinusitis. He had persistent mucous droppings from the posterior nares. He suffered some deafness, both eardrums being retracted and the left one perforated. He developed acute tonsillitis two months later and was advised to submit to tonsillectomy as soon as possible. Before this operation was performed, laboratory examinations were made of the blood, urine, and tonsils. Tonsil culture revealed *streptococcus hemolyticus;* Wassermann reaction was positive; alcoholic antigen, four plus; acetone insoluble lipoids antigen, negative; cholesterinized antigen, negative. At

A. *B.* *C.*

Fig. 6.—*A*, Radiograph made of maxilla in 1925; *B* and *C*, two radiographs made in May, 1926. *B* shows appearance of maxillary structures in region of cleft and the appliance used in moving left permanent canine into position. *C* shows lack of alveolar support to dwarfed left second incisor. This tooth was removed.

Fig. 7.—Left deciduous canine, second incisor and two supernumerary teeth, which were extracted.

the request of the laboratory, another Wassermann test was made the next day, the reaction being negative, which suggested a mistake in laboratory technic. Examination of the blood showed a bleeding time of four and one-half minutes and a coagulation time of eleven minutes, which suggested the possibility of hemophilia. Questioning corroborated this belief.

Calcium lactate was administered to reduce the coagulation time. This was lowered to eight and one-half minutes.

On Nov. 25, 1925, the tonsils were removed. At this time the two supernumerary teeth were extracted and the unerupted canine was exposed.

Fig. 7 shows the left maxillary deciduous canine and two supernumerary teeth removed at this time; the second tooth from the left is the left permanent incisor which was extracted some time later.

The sockets were sutured because of the excessive bleeding. Succeeding hemorrhages were so frequent and severe as to have been almost uncontrollable, and for a time it appeared as though the patient might not recover. The bleeding was finally controlled by the application of concentrated silver nitrate. His resistance had dropped to such a point as to necessitate a long rest period.

In June, 1926, or the following year, orthodontic treatment was renewed. (Fig. 8.) A removable, lingual, round wire appliance, 0.038 inch in thickness was adjusted to the maxillary teeth, bands having been cemented to the first molars, which carried half round tubes, into which the half round pins, attached to the arch wire, were inserted. An auxiliary wire 0.022 inch in thickness was soldered

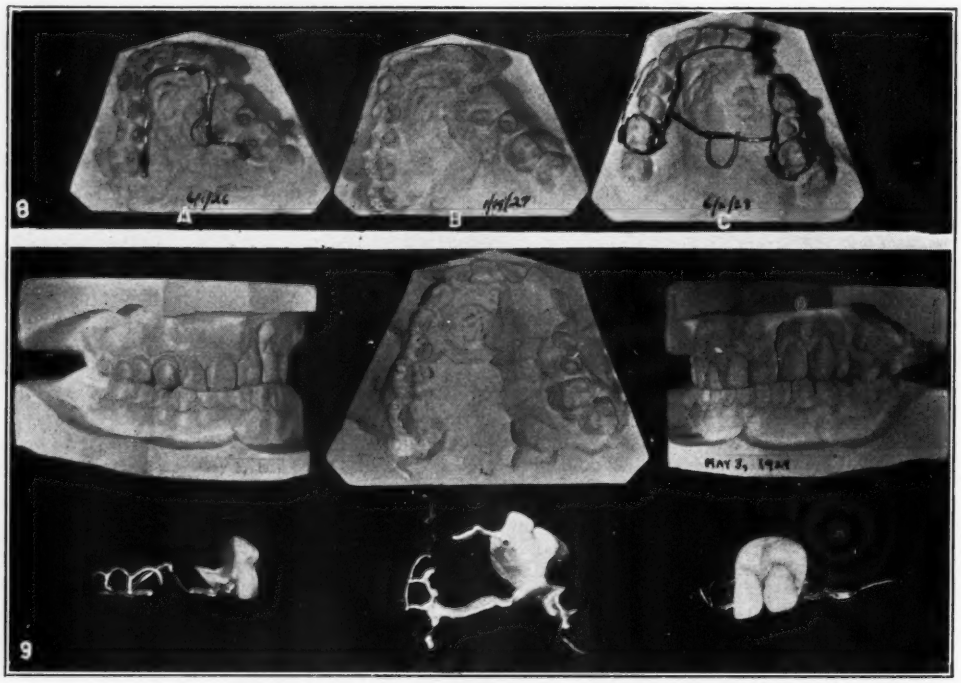


Fig. 8.—*A*, Cast of maxilla made June 1, 1926, showing removable lingual appliance in place with auxiliary wire for the stimulation of moving the exposed canine into a mesiobuccal position in the arch. *B* shows the appearance of the arch January 15, 1927. *C*, Cast made June 12, 1928, at the conclusion of orthodontic treatment. Note appliance, as explained in text, for the buccal movement of the maxillary processes. Note that the exposed canine is now in a position of alignment.

Fig. 9.—Three views of casts with prosthetic restoration in position and three views of prosthetic restoration.

to the arch wire and adjusted to exert a mild stimulation upon the palatally placed left canine, in a mesiobuccal direction (Fig. 9-*a*). The patient went to Europe for several months and lost the appliance. On October of the same year, the same type of appliance was constructed and replaced.

March 18, 1927, nine months later, a removable lingual arch, of the same type as the maxillary one was adjusted to the mandibular teeth, having auxiliary wires soldered to it for the stimulation of general expansion and development. Nov. 23, 1927, the maxillary appliance was removed and a new type of appliance adjusted.

Referring to the first part of this report, in which the discussion and the criticism of the Brophy uranoplastic operation were treated, I agreed with

Dorrance and others, that Brophy and his followers were wrong in assuming the cleft palate as the result of "a cleft being a fissure in well-developed parts"; that the operation of compression, forcibly of the maxillary processes, was responsible for the distortion presenting at this time; that the cleft palate was a result of the lack of proper union of embryonic structures and also due to the failure of sufficient tissue to enter into the oronasal structure. Treatment was therefore planned to stimulate the movement buccally of the left maxillary segment.

An appliance was adjusted to the maxillary teeth for the above mentioned purpose. This appliance was constructed of round wire, 0.038 inch in thickness, attached to the lingual aspect of the first molars by means of half round pins and tubes. Palatal extensions were soldered to the two segments of this arch,

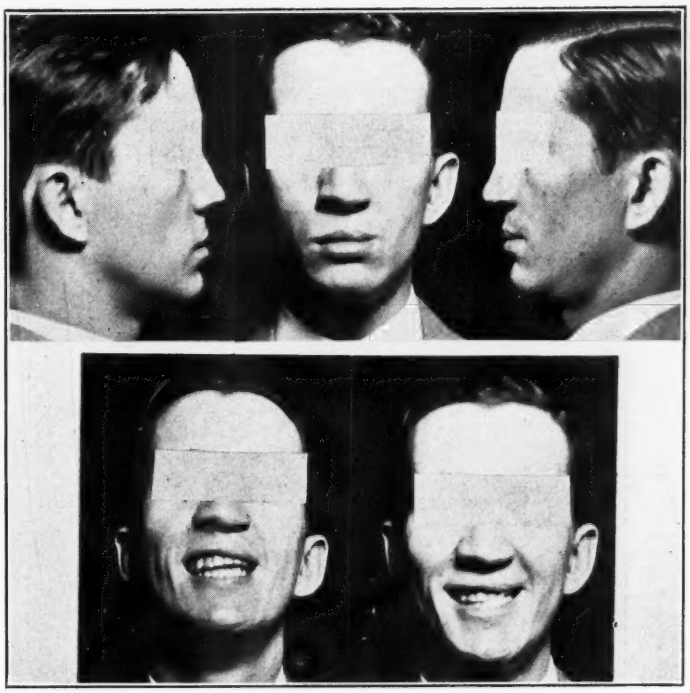


Fig. 10.—Photographs of patient made three years after cessation of treatment, showing appearance with prosthetic restoration in position.

carrying a sliding round pin and tube arrangement, at the median palatal region. An auxiliary spring wire 0.025 inch thick was soldered near the end of one of the extensions, and its free end, engaging a lug in the other palatal extension. When pressure was applied to the auxiliary wire, a force was exerted for the buccal stimulation of the maxillary segments, the right segment acting as an anchorage for the greater movement of the left segment. An auxiliary wire was soldered to the left branch of the arch for the additional buccal movement of the canine, and a buccal extension wire was attached to the right molar band for the stabilization of the right premolar teeth, there being a tendency for those teeth to move, buccally, out of alignment.

On June 6, 1928, this appliance was removed, and a removable prosthetic restoration was adjusted. This was constructed of clasp-gold and vulcanite. An

embrasure clasp, embracing the right first and second premolars and canine, was soldered to a heavy cast palatal bar. A cast-clasp embracing the lingual surfaces of the central incisors and a cast-clasp embracing the lingual surfaces of the left canine and premolar were also soldered to this bar. An artificial

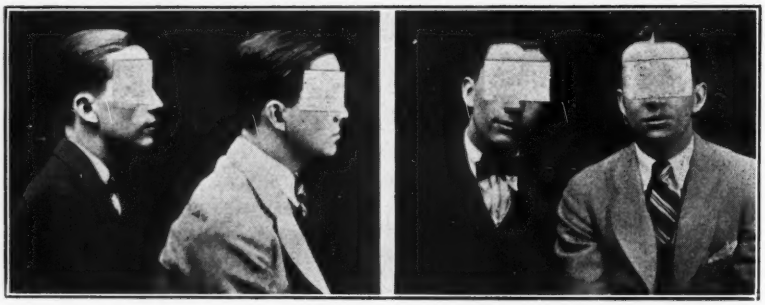


Fig. 11.—Photographs of the twin brothers, showing similarity of appearance, made after treatment was completed.

Fig. 12.—Views of casts of both brothers, photographed together for comparison. Note comparative similarity of detail, size, contour, and shapes of individual teeth.

lateral incisor and canine were attached by means of vulcanite to the appliance, the vulcanite applied in such form and quantity as to restore as nearly as possible the lost contours. Fig. 9 shows the various aspects of this appliance together with the casts of the case, with the restoration in place.

Fig. 10 shows five views of the patient, taken three years after completion of treatment. Fig. 11 shows two views of the patient and his brother taken at

this time. It is interesting to note that their weight and height are the same. Fig. 12 shows views of casts of both brothers made in 1931. Note the similarity in size, type and contour of the arches.

The patient is now a successful business man, has received his degree from the University of Pennsylvania, has overcome all tendency to feelings of self-consciousness and inferiority, is successfully married to a charming and estimable young lady and is highly esteemed in his community. His speech has improved, he has taken on additional weight, is in good health and happy. He assures me that he experiences no inconvenience in wearing this appliance and that no attention is attracted to it.

The essayist wishes to extend thanks and credit to Dr. Geo. Dorrance for valuable material found in his book *The Operative Story of Cleft Palate*, which material has been of inestimable value, in the preparation of this report.

DISCUSSION

Dr. H. E. Kelsey, Baltimore, Md.—I only want to comment on the fact that to me the case is unique in that one of a pair of twins presents the defect which is entirely lacking in the other, and seems to cast some doubt upon the hitherto well-established theory, or one that has been popularly held, that cleft palate is hereditary. That is one of the striking things about it, and one of the most valuable in the report.

A COMPLETE LINGUOVERSION OF THE MANDIBULAR TEETH TO THE MAXILLARY TEETH*

EARL F. LUSSIER, D.D.S., SAN FRANCISCO, CALIF.

THIS is a report of a simple method of treatment of a case presenting a complete linguoversion of the mandibular teeth to the maxillary teeth in a boy four years old.

He had been examined by three dentists who failed to observe this extreme malocclusion. It was only during my examination of his older sister that the

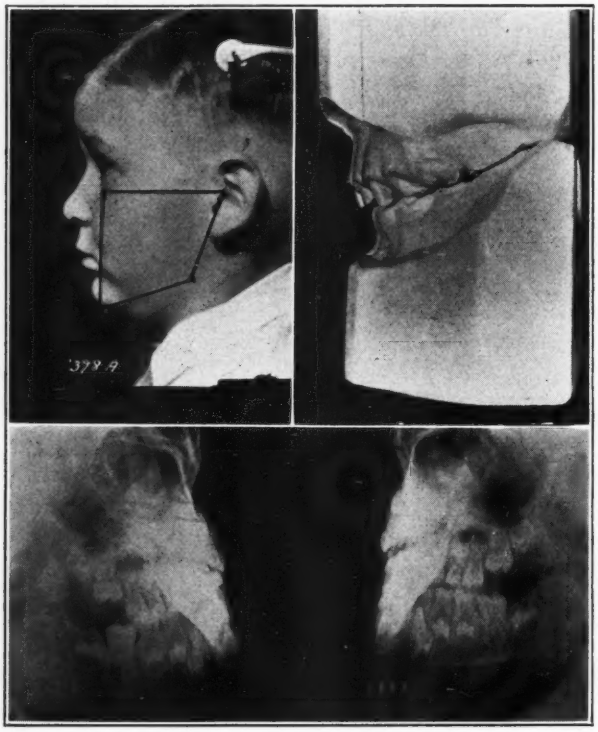


Fig. 1.

questions asked by his mother led to my examination of him. During this preliminary examination, the mother reported that he could not chew and that he would gag on peas. This, she thought, was due to a finicky appetite.

History.—His father, mother, sister and aunt had irregular teeth. However, there was no evidence of this particular type of malocclusion on either side of the family. The mother and mother's uncle had supernumerary teeth.

Although forceps were not used during the delivery of the boy, the delivery was not normal. He was a blue baby and required the use of oxygen. A very

*Presented at the Thirty-Second Annual Meeting of the American Society of Orthodontists, Oklahoma City, November 8-10, 1933.

difficult time was had with the diet of the child during infancy. There was no history of prolonged or serious illness. The throat was clear; there had been no operation on the nose or throat. The only illness had been a severe siege of whooping cough. There were no bad habits.

Description and Etiology.—The mandibular teeth, in toto, were in linguoversion to the maxillary teeth. The maxillary arch had been stimulated to an overdevelopment. The facial deformity involved the development of the chin and lower third facial height.

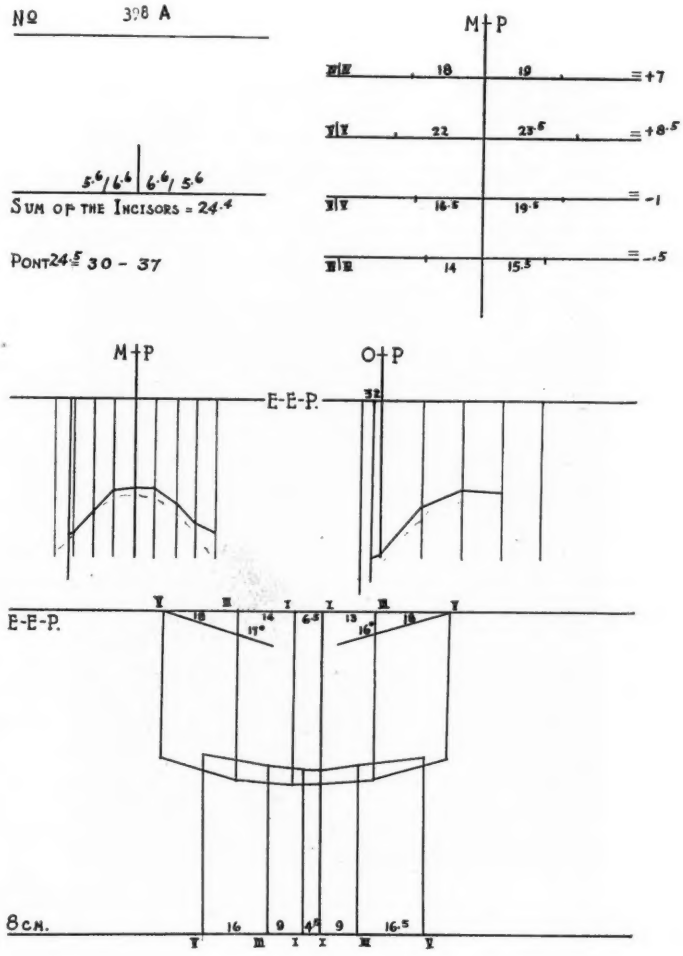


Fig. 2.

The contributing cause of the malocclusion was not disclosed, although it might have been intrauterine pressure or injury at time of delivery. The umbilical cord was wrapped around the head twice at birth.

Diagnosis.—Photostatic facial reproductions, gnathostatic plaster denture reproductions and radiographic examinations were made (Fig. 1).

Graphs of the gnathostatic plaster denture reproduction were made (Fig. 2).

An appraisal of the material showed that the anomaly in relation to the:

A. *Raphe median plane* to involve in the maxillary arch a total medium

dental alveolar distraction. The figures comparing the width between the deciduous molars to pons normal are:

Distance between $\underline{\text{IV}}|$ and $|\underline{\text{IV}}$ — plus 7 mm.

Distance between $\underline{\text{V}}|$ and $|\underline{\text{V}}$ — plus 8.5 mm.

and to involve in the mandibular arch a total mild dental alveolar contraction.

Distance between $\overline{\text{V}}|$ and $|\overline{\text{V}}$ — minus 1 mm.

Distance between $\overline{\text{IV}}|$ and $|\overline{\text{IV}}$ — minus 5 mm.

Fig. 3.

B. *Orbital plane.*—Both the photostatic profile facial reproduction and the denture reproduction showed a marked change from the normal; being in the maxillary arch a mild retraction (probably due to age) and in the mandibular arch a total mandibular retraction of one-half tooth due to complete linguoversion. The graphs and photostatic facial reproductions disclose a loss of facial height.

C. *Eye-ear plane.*—To involve in the maxillary arch a total dental attraction (probably due to age), and in the mandibular arch a total mandibular attraction (due to the total lingual occlusion).

A comparison of the two arch widths reveals the lack of harmony in the development of the arches. One comparison is made by placing the teeth on

one side in occlusion. The plaster denture reproduction in the original occlusion reveals the total linguoversion. The reason for a total lack of mastication is evident (Fig. 3).

Therapeutic Comment.—A study of the relation of the two arches when the casts were moved into a normal relation of the teeth revealed the fact that a compensating movement, that is a slight contraction of the maxillary arch and an expansion of the mandibular arch, would result quickly in the movement to be obtained. To accomplish this end it was decided to make, as part of the treatment appliance, a simple maxillary lingual arch with a bite plane attached, to relieve the interference of the teeth in occlusion during treatment. Extension wires were soldered to the buccal of the molar bands to assist in the narrowing of the maxillary arch. A simple lingual arch was used to accomplish the widening of the mandibular arch. (Fig. 4.)

The Maxillary Appliance.—Anchor bands, 0.007 inch in thickness and 0.018 inch in width, were fitted to the second deciduous molars. Half round tubes

Fig. 4.

were soldered to the lingual surfaces of the molar bands. At this point an impression was taken with the bands in position, and an artificial stone model was poured. A lingual wire 0.040 inch in diameter was then closely adapted to the lingual surfaces of the teeth on the cast; and after half round posts were soldered, it was adjusted in position by the heat treatment method; 0.022 inch lock springs were soldered to the body wire. An 0.040 inch wire was then soldered to form the bite plane. From the buccal surfaces of the molar bands, extension wires of 0.040 inch thickness were soldered to extend to the canines.

The Mandibular Appliance.—Anchor bands, 0.007 inch in thickness and 0.018 inch in width, were fitted to the mandibular deciduous molars. Half round tubes were soldered to the lingual surfaces of the anchor bands. At this point an impression was taken with the molar bands in position, and an artificial stone model was poured. A lingual wire 0.040 inch in diameter was then closely adapted to the lingual surfaces of the teeth of the cast and after half round posts were soldered it was adjusted in place by the heat treatment method; 0.022 inch wire lock springs were soldered to the body wire.

The molar bands were cemented in place and the arches adjusted in position. These were worn in this dormant condition for a week. The arches were then removed, and a slight narrowing of the maxillary arch was made; a widening of the mandibular arch was also made.

Results.—In three weeks enough movement was obtained so that it was possible to dispense with the bite plane, and it was unsoldered from the maxillary body wire. In two months the required amount of movement was obtained. At this time summer vacation interfered; and as the patient was leaving for the summer, the appliance was left in place to act as a retainer. In the fall the family returned, and the mother reported that the boy could chew anything. The appliance was left in place for six months. At that time both maxillary and

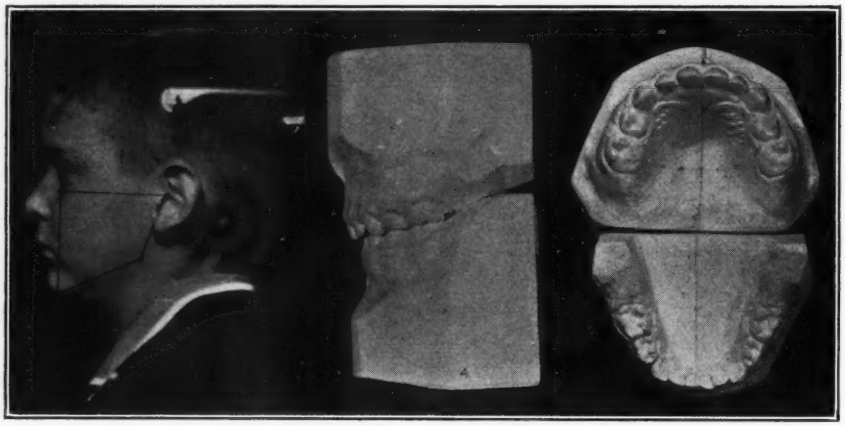


Fig. 5.

mandibular appliances were removed. Gnathostatic plaster denture reproductions and photostatic facial reproductions were made. The facial change was quite noticeable.

A year later, plaster denture reproductions and photostatic facial reproductions were made (Fig. 5). During this time no appliance or retainers were used on the teeth. The teeth and face were developing normally.

Prognosis.—Prognosis in this case is for a favorable result. Age and a normal relation of teeth and jaws and an opportunity for normal muscle function all make for a normal growth.

Observation and Conclusions.—Opportunity permits of a regular observation of the case. The final data were made a year after all appliances were removed, and no collapse of the case had occurred. The early orthodontic care of the child, making possible normal function, can result only in normal growth.

HEREDITARY MALOCCLUSION*

D. S. Hayton-Williams, L.D.S., Berkshire, England

IT HAS often struck me that there is very little in orthodontic literature or printed discussion to give an indication as to the best method of treating cases showing a very decided tendency to develop a malocclusion similar to that present in one or both parents. While admitting that hereditary factors are a cause in nearly all malocclusions—may I suggest, diffidently, they are the main cause—I am more concerned at the moment with those similar irregularities in parent and child obvious even to the layman. In practically any case teeth can be so moved as to obtain a perfect occusion, but it is quite another matter to be certain they will stay there. In these cases of strong similarity between parents and child particular care should be taken to keep tooth movement biological and not merely mechanical. By which I mean not only the gradual movement of the teeth, but a knowledge that the disposition of the musculature of the child's mouth will allow them to stay there.

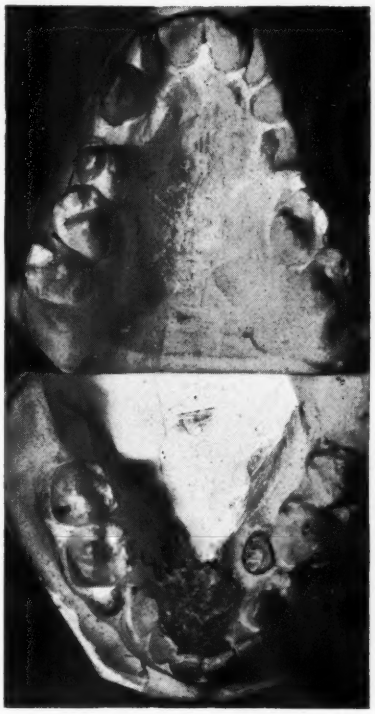


Fig. 1.—Case 1, the mother.

I find it difficult to explain lucidly my own ideas on the subject, but I feel sure that the number of factors operating in these cases—such as peculiarly

*Transactions of British Society for the Study of Orthodontics, 1933.

high cheek bones and narrow mandibles giving attachment to muscles—exercise different pressures from those in a more characteristic skull. Also the length and disposition of the lips generally might be obviously characteristic of a family.

Fig. 2.

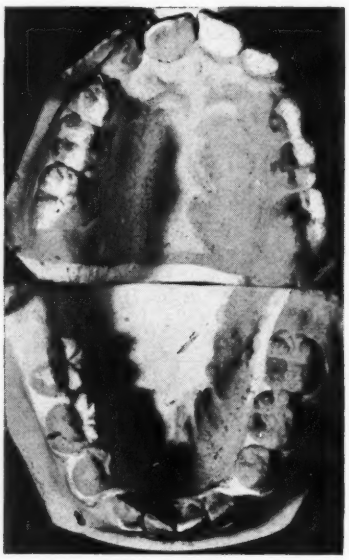


Fig. 3.

Figs. 2 and 3.—Case 2.

Fig. 4.

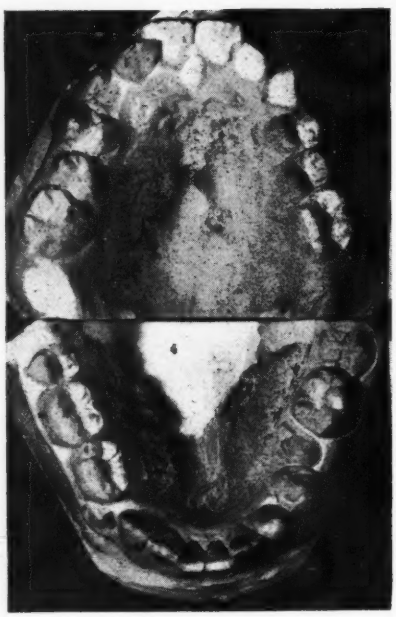


Fig. 5.

Figs. 4, 5, and 6.—Case 3.

CASE 1.—*The mother.* I should imagine you will find little difficulty in memorizing the appearance of these models. There is an instanding $\lfloor\overline{5}$ and partially erupted $\overline{5}\rfloor$; $\overline{4}\rfloor$ is missing. The extractions in the maxilla were not done with the idea of alleviating the crowding. (Fig. 1.)

CASE 2.—*The younger child.* It is at once obvious that immediate treatment was called for, and bearing in mind the mother's mouth and also her statement that such narrowness of the arches was usual in her family, I decided to extract the mandibular deciduous canines. One year later I extracted the maxillary deciduous canines. Of course, only temporary relief, but with periodical observation I can decide when to extract any permanent premolars. (Figs. 2 and 3.)

CASE 3.—*The elder child* was brought to me at a later age. Narrowness in the mandibular incisor and canine region is apparent and also commencement of an overlap in the maxillary incisors. I waited six months and Figs. 4 and 5

Fig. 6.

show the condition then. I extracted the four first premolars simultaneously, as immediate action was called for in the mandible, and I felt it opportune in the maxilla, as the permanent canines were erupting. Fig. 6 shows the case twelve months later—spaces to close, granted, but I think they will.

All these patients have tight lips and cheeks.

In each of these cases I treated, I felt that mere mechanical treatment would not give a permanent pleasing result. I am open to criticism from older and more experienced members, and trust I shall have a clearer conception of these cases as a result of any discussion.

DISCUSSION

The President said that he thought Mr. Hayton-Williams was quite correct in extracting the teeth in these cases. The case of the mother was a good example of a very narrow mouth. He was quite right in reducing the size of the arches.

STANDARDIZING THE ORTHODONTIST'S PHOTOGRAPHIC EQUIPMENT AND TECHNIC*

ALBERT E. VOSS, D.D.S., LOS ANGELES, CALIF.

SECURING good clinical photographs of patients has been more or less of a problem to the orthodontist. Unless some standardized method is followed, which assures all photographic exposures being made under the same exacting conditions of position and size and with lens of proper focal length, the results

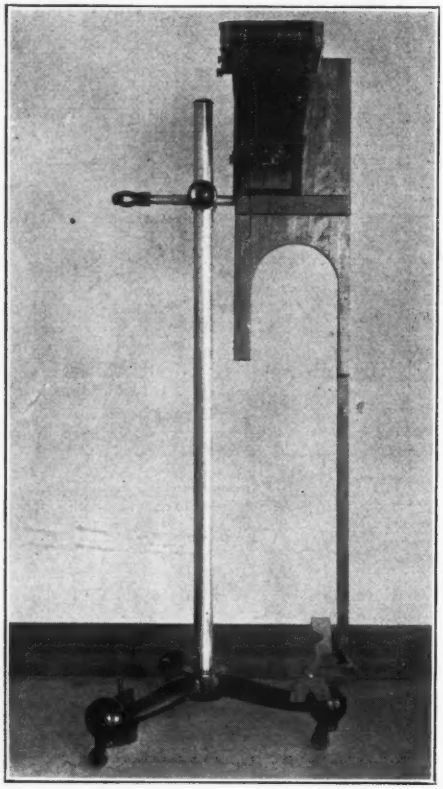


Fig. 1.

are sure to be disappointing and the photographs of but little value from the standpoint of diagnosis. The following is a brief description of a very efficient equipment, not differing greatly in the essentials from the one worked out by Dr. Paul Simon of Berlin. It is a unit that will afford the user very satisfactory results.

The camera lens is an anastigmat with a focal length of 10.5 inches. Photographs of one-fourth life size made with a lens of this focal length show a good

*Clinic presented at the Thirty-Second Annual Meeting of the American Society of Orthodontists, Oklahoma City, Okla., November 8-10, 1933.

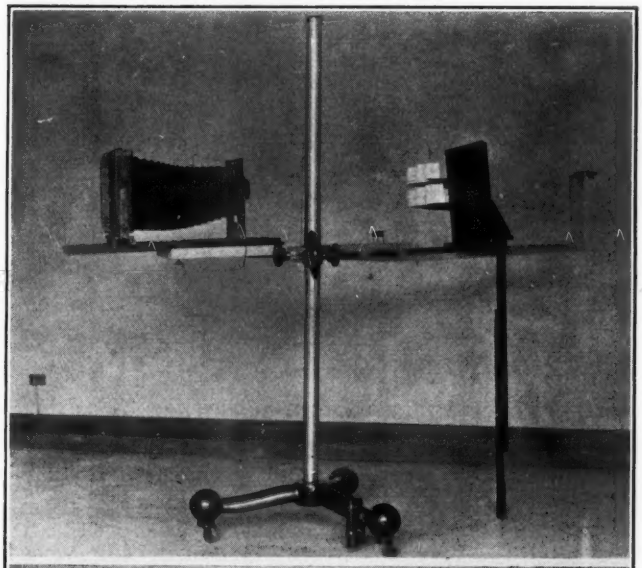


Fig. 2.

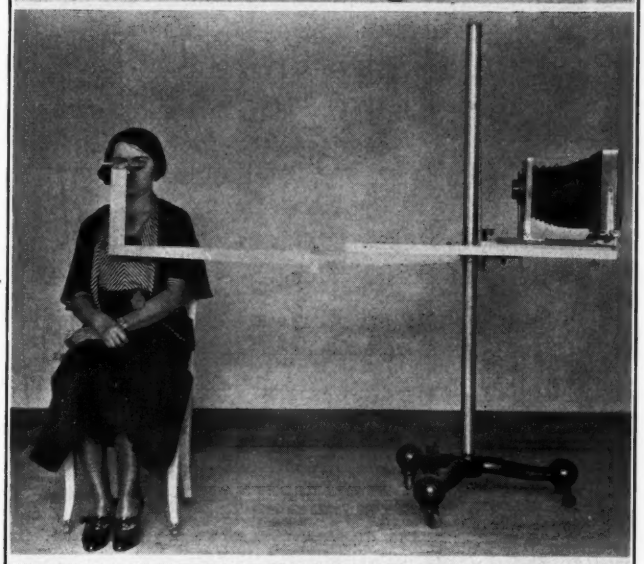


Fig. 3.

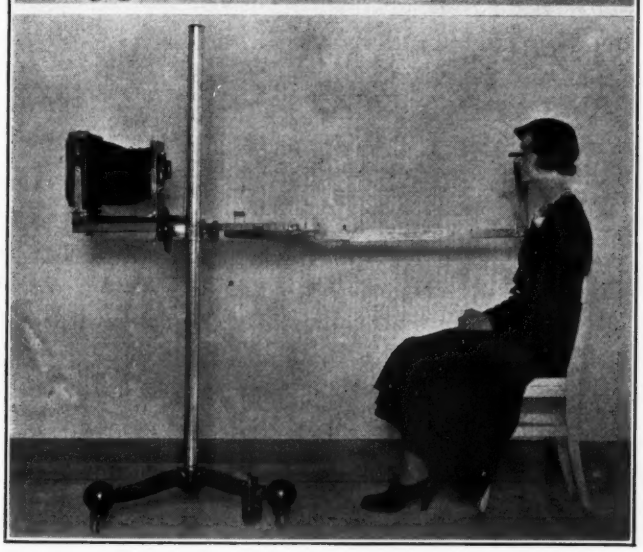


Fig. 4.

perspective with little distortion. Should the one-half life photograph be desired, better results are obtained through the use of a lens with a focal length of from 16 to 19 inches.

The camera is a 6½ x 8½ view camera, with an extreme bellows extension of 28 inches. Bellows of this length are adjustable for use of the 10.5 inch focal length lens for one-fourth life work and at the same time at extreme extension permits of the use of a 16 to 19 inch focal length lens for one-half life work, if desired.

The ground surface of the focusing glass of the camera has attached, by means of Canada balsam, several round microscopical cover glasses. Cover glasses, so attached, clear the ground glass permitting an unobstructed view of the finer details of the face and facilitate a sharper focusing. A small tripod magnifying glass should be used to view the image on the ground glass as a further aid in obtaining the sharpest focus. My attention was first called to this method by Dr. A. H. Ketcham.

The camera is mounted on a base board which carries the correct length extension arm and nosepiece, similar to that of Dr. Simon (Fig. 1). A second extension arm carries a special model holding board for use while photographing models (Fig. 2). The portrait extension arm and nosepiece are constructed with a swivel joint allowing their being moved out of range when exposures are made. A shorter extension arm of correct length, interchangeable with the longer, is necessary in doing one-half life size photographs.

Camera and base board are mounted on an x-ray tube stand. This arrangement affords all desirable positioning of camera and nosepiece supporting arm, and also gives the stability needed as a camera support. Such use of the x-ray tube stand was originated by Dr. James D. McCoy.

Any small light chair, provided with casters and fitted with a light headrest, completes the equipment. As a background, Canton flannel with a fuzzy finish, black, gray or white, is excellent. Background should be placed about three feet beyond patient's head.

Natural lighting may be practical in some offices under certain conditions for the production of good photographs, but there are times when such lighting conditions are not dependable. A more satisfactory method is by means of artificial lighting and the use of reflectors.

In placing patient for exposure, the eye-ear plane should be horizontal and chair should be drawn up so that the edges of the lateral halves of the nose board be in contact with eye points (orbitale), the nose aimer at the same time should trace along the middle of the upper dorsum of the nose (nasion). With the patient so positioned, the nose board and extension arm are swivelled out of range and exposure may be made. Fig. 3 shows position of patient and unit, for profile exposure. Fig. 4 shows position of patient for full face exposure.

IMPACTED CANINES AND MISSING LATERAL INCISORS*

F. L. King, L.D.S., Harrow-on-the-Hill, England

THE first case, one of unerupted canines, I am reporting not because it is unique or that the manner of treating it differs from that of any other case of this class, although I will remark in passing on a point of technic; but principally because I wish to ask a few questions on this type of case in general, and I hope that it will prove of sufficient interest to promote discussion.

The child, a girl aged eleven years, presented an almost normally formed maxillary arch. Since it was known that the child's mother did not erupt her permanent canines, radiograms of the child's mouth were made, by which it was ascertained that the permanent canines were lying in the palate almost horizontal, with their cusps almost in juxtaposition. By orthodontic treatment these teeth were caused to erupt into their normal positions in the arch.

The method was the ordinary and obvious one of exerting a pulling force upon the crowns of the canines. The anchorage for the force was a buccal arch and the force unit was India-rubber bands at first and auxiliary wire springs later.

The application of the force to the canines was by means of wire hooks. Now this is where the technic may be a little different from the usual. I found that owing to the great depth of the canines in the tissue and to hemorrhage that took place in the small deep incision, it was difficult to cement successfully a hook into a necessarily shallow hole in a tooth of whose surface only a very small area was visible. So in this case the hole was threaded with a watchmaker's threading tap and a hook threaded to match was screwed into it. In order to drill the hole to a safe depth a loose sleeve was placed upon the drill. Now the questions:

(1) What is the incidence of these cases, i.e., are they very, very rare, or rare, or met with frequently?

(2) What is the etiology of such a case where teeth fail to erupt into correct position even though the arch be well formed and there is sufficient room for them?

(3) What would accrue if such a case was left untreated?

  (*a*) Would not the deciduous canines ultimately absorb and have to be replaced by a prosthetic appliance?

  (*b*) Then also is there the likelihood of pathologic trouble arising from the abnormal position of the unerupted teeth?

    (1) By pressure upon nerves?

    (2) By pressure upon other teeth with perhaps resultant malposition and/or absorption of these latter teeth?

*Transactions of British Society for the Study of Orthodontics, 1932.

Concerning pathologic disturbance by pressure upon nerves. I have here for your inspection models and radiographs of the mouth of the patient's mother. The left canine is unerupted, and the right canine is only partially erupted; this latter tooth was brought into position, the mother reports, by orthodontic treatment at the age of about sixteen years, because attacks of very severe neuralgia pains were thought to have been due to the pressure caused by the abnormally placed canines.

From the esthetic point of view, the treatment in the case of the right tooth was only partially successful, and was therefore not attempted upon the other. The neuralgia, however, disappeared.

Concerning pressure upon other teeth. In the *British Dental Journal* of October 15, there is a reprint from *Revue de Laryngologie*, of a case of extremely severe neuralgia due to the pressure of an unerupted premolar. Now there is yet another question, What are the dangers that might accrue from the carrying out of this work?

My second case is apropos Mr. McLeod's communications of last meeting. I shall give the case first and afterward my reasons for bringing it forward. The

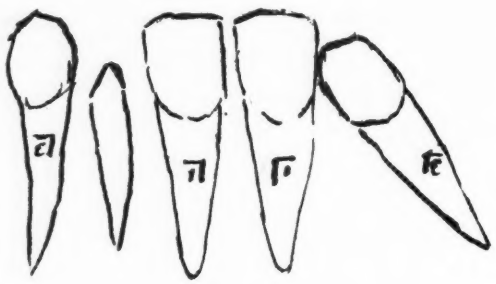


Fig. 1.

right lateral incisor is missing and the right canine is slanting obliquely across the space and is somewhat rotated so that its mesial labial angle is almost, and soon will be, overlapping the distolabial angle of the central incisor as shown in Fig. 1.

The left lateral incisor is not missing, but is of very rudimentary shape. Mr. McLeod asked for advice in treating his cases, and if I remember rightly, all the speakers suggested that he should let the canines close up to the central incisors. It was noticeable to me how freely they gave this advice regardless of the individual circumstances that may have obtained in those cases. Their attitude rather gave the impression that there is a treatment common to all cases of missing lateral incisors, viz., let the canines close up to the central incisors.

Now I should like to suggest that such a line of action would not give a good result here, and that alternatively it would be better to move the crown of the canine back and to replace the lateral incisor prosthetically and match it on the right with a jacket crown placed upon the rudimentary lateral incisor. I should be pleased to hear your observations.

DISCUSSION

The *President* said he had on two occasions seen maxillary lateral incisors which had been absorbed, even to the crowns, by the advancing maxillary canines.

Mr. Northcroft wondered whether Mr. King was acquainted with the orthodontic section of the odontological museum at the Royal College of Surgeons, but judging from the large number of cases of impacted canines that had been collected there, the anomaly was by no means uncommon. He thought that every type of impacted canine that was ever likely to be encountered was represented, from canines erupting through the floor of the nose to two canines meeting in the midline in the palate. The use of x-ray pictures was of great help to see whether absorption was taking, or likely to take place. He had tapped screws into canines to bring them down, but it was a little difficult to cut a thread in enamel, and it was necessary to use a very well-tempered tap to do that. He had found of considerable use cementing a split pin in an under-cut hole, just as a stone mason puts in a key to raise enormous blocks of stone. That was an excellent way of getting over the difficulty of getting traction on unerupted teeth, whether they were canines or any other teeth.

Mr. Chapman said he more or less agreed with Mr. Northcroft as to the incidence of impacted canines. In his opinion such cases were rare, but perhaps not very rare. He had seen about eight or ten in the last fifteen years in private practice. One frequently found that two impacted canines were in otherwise very good arches. As regards bringing them into place, he had not found that there was any danger at all in doing that. The only difficulty was, when the canines were at a very bad angle to get them into a presentable position; that seemed to be the chief difficulty in those cases. In regard to whether it was wise to leave them alone or not, he thought that depended on the individual case. In the case of the girl aged about twenty-one years old, whom he had shown, the one who had one deciduous molar removed, she had one horizontal canine, and the corresponding deciduous one in place, and it was decided in her case, after consultation as to what she would prefer, to leave the deciduous canine and horizontal canine, and if the latter ever gave trouble to have it removed. It seemed to him that the decision depended on individual circumstances. With regard to the permanent canine which was not quite vertical, he did not think it should be very difficult to straighten that tooth. One could have a spring to bring the tip of the canine distally, and another spring on the other side, near the neck, to tilt the root mesially, or else it could be done by means of a spring attached to a half round rod entering a tube soldered to a band on the canine, and then the tooth could be moved in any desired direction.

INCISOR TOOTH DEFICIENCY IN THREE GENERATIONS*

A. C. R. McLeod, L.D.S., London, England

THE diagram depicts the intermarriage of four families, members of whom were unfortunate enough not to possess their second incisors (maxillary lateral incisors). One family had come from Scotland, and the others from various parts of the United States. In the oldest family, shown in the middle of the chart, the father possessed lateral incisors, but the mother did not. They had five children, four boys and one girl. Two boys had no lateral incisors, and one of these married the daughter of another family in the United States. This lady had only one canine. Their children, three boys and one girl, had no lateral incisors. The chart shows the linking of this family with that on the right of the chart by the marriage of a son of the former family with a daughter of the latter.

This latter's family consists of two daughters and two sons, none of whom, in common with their mother, has any lateral incisors.

From this union there is one daughter with no deciduous laterals, as shown on the lower right side of the chart.

To return to the chart, we see on the left, families in Scotland who have intermarried. The first dental history shows a son with spaced teeth married to a daughter of another family who has all her teeth, but whose sisters have one or both lateral incisors absent.

The children of this union are two daghters with good teeth, and a son with one lateral incisor, and that one malformed.

The son was married to a granddaughter of the oldest family, as shown on the chart. Here the husband has one lateral incisor and the wife no lateral incisors.

One of their children had no lateral incisors, but all deciduous teeth were present.

In the case of one family no orthodontic treatment had been done, while in another case the spaces had been retained by orthodontic means, and filled with dentures, which were constructed on a continuous clasp principle, and caused cavities all round the mouth, the care of which required constant attention. The question was what to do with the youngest generation. Should an attempt be made to open the spaces with orthodontic appliances or to close them or allow them to close themselves if they would? The parents wanted something done very soon for one of the children, and in view of the family history he did not know what to advise. On one side, nothing had been done, and some members of the family were satisfied and others were not; on the other side, orthodontic appliances, dentures, and bridges had been used, and again some were satisfied and others not.

*Transactions of British Society for the Study of Orthodontics.

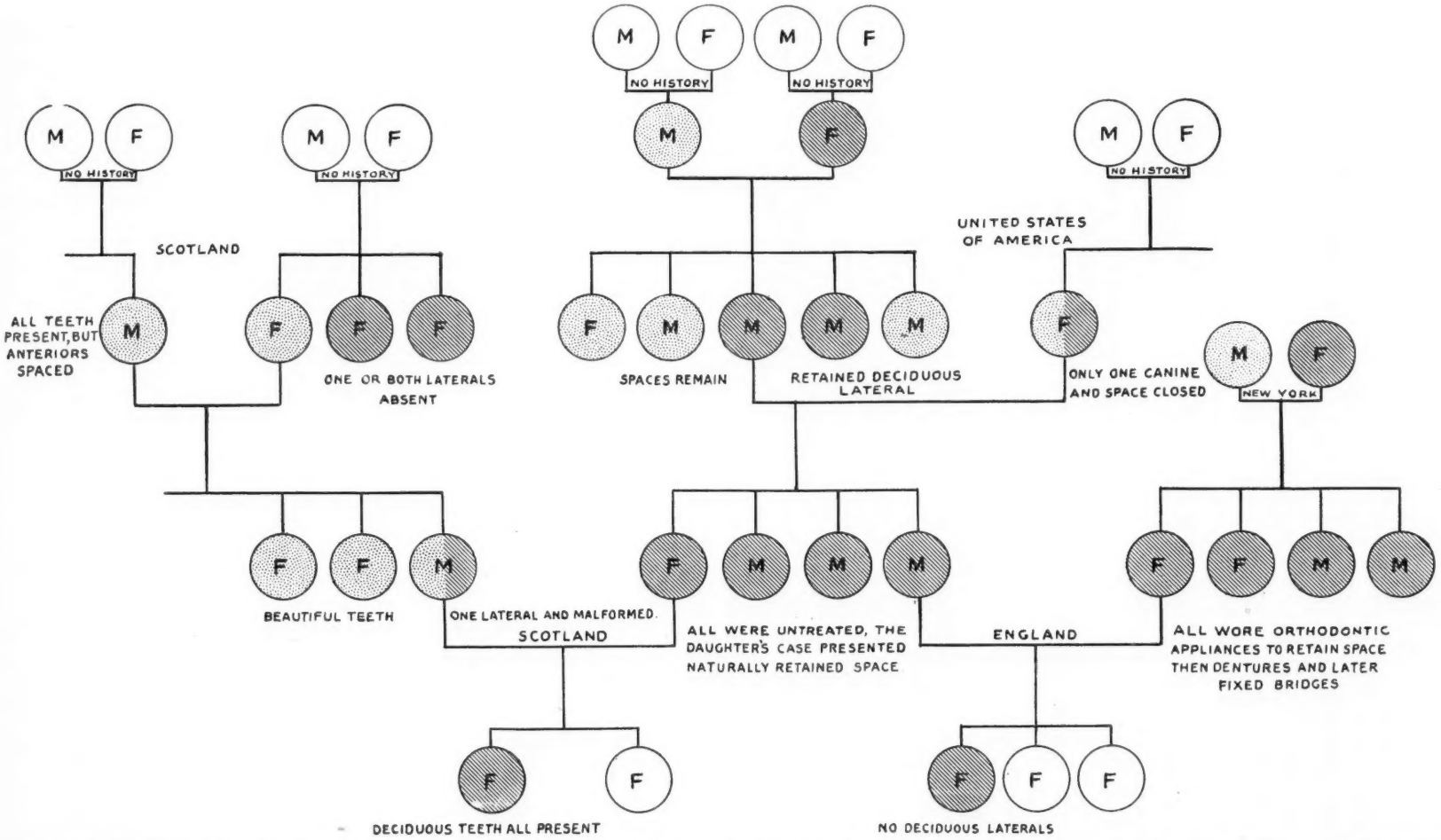


Fig. 1.—Circles with white space, no history; circles with lines, no lateral incisors; circles with dots, lateral incisors present; circles half with dots and half with lines, one lateral incisor absent.

DISCUSSION

Mr. H. G. Watkin said that, as regarded treatment of the new cases, he would not hesitate to fill up the spaces, and at a later date trim off the tips of the canines. This was very much better than to attempt bridgework or plates. It might be necessary to remove some of the mandibular teeth.

Mr. Maxwell Stephens said he would close up the spaces unless the parent wanted something else done.

Mr. J. H. Badcock said that the history was one of the most complete he had seen for a case of this kind. They all knew how common it was to find that the parent or some relative of the patient suffered the same disability, such as absence of lateral incisors, but he was afraid that he at any rate had never traced the history back so far as had been done in this case. With regard to treatment, he agreed with previous speakers. It seemed to him entirely wrong to saddle the child with some mechanical apparatus that he would have to wear for the rest of his life. It generally meant trouble in the future. He had no doubt whatever that the best thing to do was to close up the spaces. Some such treatment was infinitely better than the insertion of a mechanical appliance.

Mr. Herbert introduced a comparable case of family inheritance. The two lateral incisors were missing in the case of the mother, and one child had a cleft palate on one side with the lateral incisor missing, while another child showed the absence of both canines.

The *President* said that he had seen similar cases, and that evidently there was scope for all sorts of treatment.

Mr. McLeod, in replying on the brief discussion, said that he appreciated the fact that most of the speakers had given him the same advice, and that seemed to be the one line of treatment open to him. He had been asked the question several times before the meeting whether he had seen any indication of cleft palate in any of these cases, but he had not done so. Following the discussion, he now thought it would be right to close up the spaces.

A REMOVABLE RETAINER AND A LINGUAL LOCK SPRING*

JOSEPH H. WILLIAMS, D.D.S., ST. LOUIS, MO.

THIS is a removable retainer constructed of wire, embodying the principles of the Hawley vulcanite retainer, Fig. 1.

The first step in the construction is to trim around the necks of the teeth on the cast, especially on the lingual surfaces (Fig. 2).

Then 0.032 or 0.036 wire is fitted to the necks of the premolars and first molars on the lingual surfaces of the teeth (each tooth individually) Fig. 3*A*.

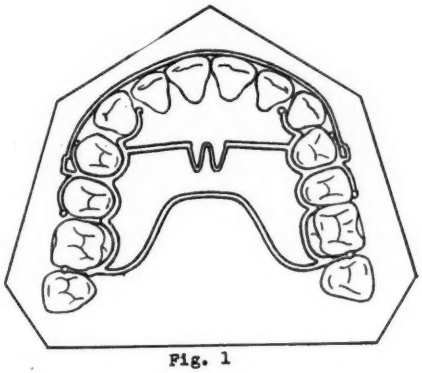


Fig. 1

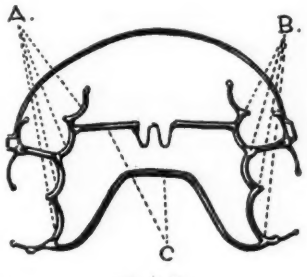


Fig. 3

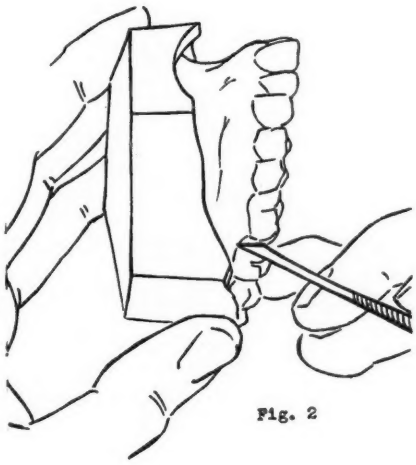


Fig. 2

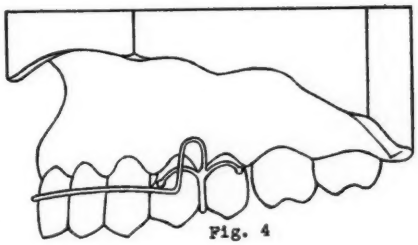


Fig. 4

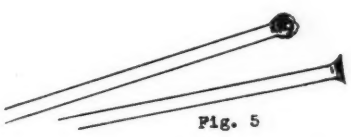


Fig. 5

These are then soldered at the interproximal spaces, Fig. 3*B*. The palatal wires (Fig. 3*C*) are then fitted to the model and soldered. The W-loop is made of 0.022 wire.

The interproximal loops and labial clasps are made as in the Hawley vulcanite retainer (Fig. 4).

*Clinic presented at the Thirty-Second Annual Meeting of the American Society of Orthodontists, Oklahoma City, November, 1933.

The advantages of this appliance are that expansion can be secured by opening the W-loop; that other attachments can be added when occasion arises for moving individual teeth; and that it can be made from used appliances.

NOTE.—When soldering a small gauge wire to one of a larger size, melt a ball on the end of the small wire and then file it flat, as in Fig. 5. This gives a better and stronger attachment.

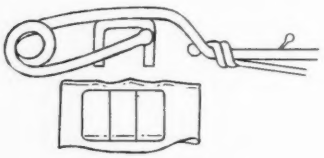


Fig. 6.

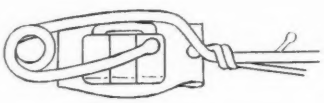


Fig. 7.

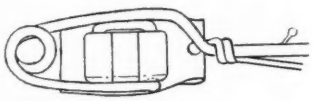


Fig. 8.

A lingual lock spring embodying the principle of the safety pin is shown in Figs. 6, 7, and 8.

A wire of 0.022 gauge is attached to the end of the lingual wire distal to the lock, then coiled around a piece of 0.036 wire to form a spring. The end of the spring is then melted into a small ball to rest in the opening of the tube when it is locked, as in Fig. 8.

MINUTES OF THE THIRTY-SECOND ANNUAL MEETING OF THE AMERICAN SOCIETY OF ORTHODONTISTS*

WEDNESDAY MORNING SESSION
(November 8, 1933)

The opening business session of the Thirty-Second Annual Meeting of the American Society of Orthodontists, held at the Oklahoma Biltmore Hotel, Oklahoma City, Oklahoma, November 8-10, 1933, was called to order at nine-twenty o'clock by Dr. William E. Flesher, Oklahoma City, President of the Society.

After preliminary remarks by President Flesher the address of welcome was given by the Honorable J. F. Owens, President of the Chamber of Commerce and the Director of the United States Chamber of Commerce.

The response to the address of welcome was then made by Dr. Harry E. Kelsey of Baltimore, Maryland, and this was followed by the invocation by the Reverend Dr. McClure.

Dr. Paul G. Spencer then took the chair and introduced the President of the American Society of Orthodontists, Dr. Flesher, who delivered the President's Address.

Dr. Wm. A. Murray, Chairman of the Board of Censors then gave the report of the Board of Censors. This report included the approval of the following names for election to membership:

Dr. Curtis L. Benight, Denver, Colo.
Dr. George M. Russell, Memphis, Tenn.
Dr. William A. Giblin, Montclair, N. J.
Dr. W. Glenn Phillips, Jacksonville, Fla.
Dr. Everett A. Tisdale, Boston, Mass.
Dr. Frederick W. Black, Cincinnati, Ohio.
Dr. W. H. Grinnell, Boston, Mass.
Dr. A. A. Somerville, Toronto, Canada.
Dr. Charles R. Brooks, Detroit, Mich.
Dr. Leslie P. Abbe, Hartford, Conn.
Dr. F. Clarence Thompson, Montreal, Canada.

The Society then voted these men to full membership.

Next followed the report of the Program Committee, Dr. Paul G. Spencer, Chairman. Dr. Spencer moved that the printed program be made to the regular order of business, motion carried.

The Secretary's report was dispensed with at this time on account of a heavy program. Dr. Wood announced that the only report he had at this time was that the ballots for the election of officers had been counted by the Executive Council and showed the results of the election as follows:

President-elect: Dr. H. C. Pollock, St. Louis, Mo.
Vice President: Dr. P. G. Spencer, Waco, Texas.
Secretary-Treasurer: Dr. Claude R. Wood, Knoxville, Tenn.

Other announcements were made by Secretary Wood, following which the meeting adjourned at ten-twenty o'clock.

THURSDAY AFTERNOON SESSION
(November 9, 1933)

President Flesher presided at the meeting. Secretary-Treasurer Wood then read the Secretary's report for 1933, which was regularly adopted. The Secretary then reported the transactions of the Executive Council.

*November 8-10, 1933, Oklahoma Biltmore Hotel, Oklahoma City, Oklahoma.

The Executive Council, followed by action of the Society, nominated Dr. W. A. Murray of Chicago to the Board of Censors for a period of three years. The Executive Council nominated for the Budget Committee Dr. Walter Ellis of Buffalo for a period of three years, which was regularly approved by the Society. The nomination of Dr. Frank Casto of Cleveland as a member of the Constitution and By-Laws Committee for a period of three years was then regularly approved. The nomination of Dr. E. G. Jones of Columbus as a member of the Committee on Orthodontic Education for a period of three years was approved. Dr. Vernon Fisk as a member of the Publication Committee for a period of three years was approved. The nomination of Dr. Lourie Porter of New York as a member of the Legislative Committee for a period of three years was approved. The nomination of Dr. George Moore of Ann Arbor, Mich., as a member of the Research Committee for a period of three years was approved. The nomination of Dr. George M. Anderson of Baltimore as a member of the Relief Committee for three years was approved.

The report of the Librarian, Dr. Hoffman, was then given by means of a letter which had been sent to the Secretary. The Budget Committee under Dr. Chas. R. Baker made no report at this time. Constitution and By-Laws Committee under Dr. Casto made no report. The Committee on Orthodontic Education, Earl G. Jones, Chairman, then made its report.

The motion was then made and passed that the above report be made a part of the Literary Program of the American Society of Orthodontia. Next was the report of the Committee of Legislation, Dr. A. E. Scott. The above report was approved. Next the report of the Research Committee of the American Society of Orthodontia was given by Dr. Albert H. Ketcham, Chairman.

A motion was then carried, introduced by Dr. E. G. Jones as follows: Be it resolved that any request for the appropriation of funds other than for current expenses of the Society shall be referred to the Executive Council for its consideration and recommendations.

THURSDAY EVENING SESSION

(November 9, 1933)

The meeting convened at seven-twenty o'clock, President Flesher presiding.

First order of business was the report of the Committee on Relief by Dr. Harry E. Kelsey of Baltimore.

Next order of business was the report of the Committee on the President's address by Dr. Harry E. Kelsey, who said, "After carefully perusing the address, the committee regard it as most excellent and quite in the class with the very best of these reports which have appeared before the American Society of Orthodontists in the past.

"We commend the formation of study groups.

"We commend the suggestion expressed with regard to the further development of sectional societies and their closer cooperation with this Society.

"The committee believes there is much merit in the suggestion that the district orthodontic societies become constituents of the American Society of Orthodontists.

"We heartily concur in the statement urging the members of the American Society of Orthodontists to support the Section on Orthodontia of the American Dental Association.

"We commend the President in his comprehensive résumé of the problems now confronting the profession, and agree with him that it is the duty of each member of the Society to assume his part of the responsibility in their solution."

The report was then regularly adopted.

Next the report of the Committee on Necrology. Secretary Wood said that in the absence of Dr. Gray, he had the annual report as submitted by him. It covered resolutions on the death of Dr. Martin Dewey, Dr. Wm. C. Fisher, Dr. Milton T. Watson, Dr. Richard Summa, and Dr. Samuel Fahrney. Dr. Wood suggested that the report be incorporated in the proceedings and be published as submitted by the Committee on Necrology. The report was adopted. The audience then arose and stood in silent tribute to the five members who had passed away.

Next order of business was the report of the American Board of Orthodontia to the American Society of Orthodontists.

"The Board reports that certificates have been granted to seventy-seven applicants to date. Twenty-five applications are before the Board for final consideration after the requirements of the Board have been fulfilled.

"The Board further reports that the character of the work presented by applicants for certification shows a steady improvement in quality.

"The members of the Board are gratified to learn of the interest which is being displayed by orthodontists, especially on the part of the younger men, who, in anticipation of applying for examination, are improving their methods in diagnosis and in the keeping of case records, as well as in technic and in their comprehension of the biologic and mechanical phases of orthodontic treatment."

(Signed)
ALBERT H. KETCHAM, President of the
American Board of Orthodontia.

The report of the Board was then regularly adopted.

Dr. Waugh, then, with preliminary remarks, offered a motion to the effect that the next meeting of the American Society of Orthodontia be held in April, 1935. Motion was carried unanimously.

It was next moved and seconded that the dues for the fiscal year 1934 and 1935 be remitted.

After considerable discussion by the Secretary-Treasurer and other members, the motion was carried unanimously.

Dr. Waugh then spoke at quite some length on the subject of reorganization of the Society so as to place the organization on a national and perhaps an international basis. He pointed out that "This American Society of Orthodontists is an independent organization, covering the United States and Canada. It has no relationship to any other body of orthodontists. There is one regular meeting per year. There are also quite a number of sectional or regional orthodontic societies, each independent of the others. There is lacking a uniformity in membership standard for the various sections. In some, it is two years of exclusive specialization, and in others three years is the requirement for admission.

"There are, today, applications before the Board of Censors for admission to the American Society of Orthodontists of men who are not members of their local society, some being men who have been rejected by the local society and who are trying to triumph over local colleagues by being accepted directly into the American Society of Orthodontists. This unfortunate condition would be entirely obviated were we organized on a national basis, for thereby members would be voted into the regional or sectional society, and, this being a component part of the national organization, each one of its members would automatically become a member of the American Society of Orthodontists.

"Then, too, there are some misnamed orthodontic societies, the members of which are not specialists but pose as such, and are obtaining publicity for the direct purpose of getting patients. This form of deception could be more effectively dealt with were all recognized local societies component parts of the national body.

"The membership of the American Society of Orthodontists would be considerably increased, as there are a surprising number of members in some sectional societies who do not belong to the American Society of Orthodontists. For the individual member, there would be a material saving, as there is some duplication of expense.

"In the reorganization plan, all of the dues would be paid to the sectional treasurer, who would retain the amount needed by the local section, and forward the balance to the national treasurer. Thus the sectional societies could individually decide on the amount needed and add this to the amount due the American Society of Orthodontists.

"Before offering a resolution bearing on this, may I please assure you that I have no pet theory or set plan to urge upon you. I shall hope only to bring this whole problem before you through a well-chosen joint committee representing all the recognized regional societies, and their conclusions will be presented for consideration and vote at our next meeting.

"The best way, we feel, in which this could be done would be to empower your President to appoint a committee whose duty it shall be to devise a plan to be presented to this Society before the next meeting for discussion and adoption. If such a thing were done, I feel I should ask for a committee by writing to the president of each sectional society and asking him to serve or to name himself with one other member, perhaps the secretary, or to name two in his membership who would serve on this committee, so that we might see just what the sectional societies all over the country would want and in that way work together.

"It will be a lot of work, but worthwhile work to strengthen our organization, increase its cohesion and decrease the amount of dues we have to pay, and yet make it more effective. I think that would be the way to go at it. At any rate, there would be no effort to put anything over on anybody. The effort would be to have what everybody would agree on, as well as could be attained in an organization of 400 specialists. We would have an organization which would be for the best interests of every one.

"If it please you, I hope somebody will make a motion that the President be empowered to appoint a committee for the purpose of making a survey or devising a plan for such to be presented at the meeting in 1935."

A motion was then made that the local organizations be allowed to determine their own dues and adopt it as suggested by Dr. Waugh. Motion was carried.

Upon regular motion, New York City was then chosen for the next annual meeting.

The next order of business was the nomination of officers.

Dr. Paul Spencer, Waco, Texas, was regularly nominated President-elect.

Dr. James D. McCoy, Los Angeles, California, was nominated Vice President.

Dr. Claude R. Wood, Knoxville, Tennessee, was nominated Secretary-Treasurer.

The meeting was then adjourned until eight-fifty o'clock.

FRIDAY MORNING SESSION
(November 10, 1933)

The meeting was called to order by President Flesher, and the minutes of Thursday afternoon and evening sessions were read.

Dr. E. N. Bach then made a report for the Clinic Committee.

Next followed the report of the Inter-Relations Committee by Dr. Joseph D. Eby.

Subsequent to the report of Dr. Eby, a resolution introduced by Dr. Casto was regularly adopted, "That the report of the Chairman of the Inter-Relations Committee be accepted, and that this Society recommend to the officers of the International Orthodontic Congress that the date of the meeting be set for 1938, and that the meeting be held in the City of Montreal, Canada." Motion was carried.

The business session was then regularly closed and the meeting adjourned at ten forty-five o'clock.

FRIDAY AFTERNOON SESSION
(November 10, 1933)

Secretary Wood read the minutes of the previous session.

Secretary Wood read the list of applicants for membership in the Society:

L. B. Higley, 624 N. Linn St., Iowa City, Iowa.
Irwin F. Steuer, 1208 Medical Arts Bldg., Cleveland, Ohio.
J. Lyndon Carman, 1578 Humboldt St., Denver, Colo.
Wm. M. Pugh, 1017 First National Bank Bldg., Wichita, Kan.
Herbert H. Ernst, 730 Fifth Ave., New York, N. Y.
Samuel P. Adams, 231 Masonic Temple Bldg., Portsmouth, Ohio.
C. S. Foster, 803 Daws Bldg., Cedar Rapids, Iowa.
Van A. Stilley, 816-17 City National Bank Bldg., Paducah, Ky.
M. Bagley Walker, Medical Arts Bldg., Norfolk, Va.
Charles F. Russell, 1017 Professional Bldg., Waco, Texas.
Wm. Tyler Haynes, 406 Medical Arts Bldg., Richmond, Va.
Chas. W. Bruner, 505 Blackhawk Bldg., Waterloo, Iowa.

Howard John Buchner, 1011 Lake St., Oak Park, Ill.
John G. Brittain, 512 Baxter Bldg., Harlingen, Texas.
Ray Woodworth, 714 National Reserve Bldg., Topeka, Kan.
Harold E. Rice, 210 Ferguson Bldg., Colorado Springs, Colo.
Russell T. Goldsmith, 1003 Medical Arts Bldg., Houston, Texas.
Floyd E. Gibbin, 333 Linwood Ave., Buffalo, N. Y.
Walter J. Sly, 60 Charlesgate, West, Boston, Mass.

These names are to be acted upon at the next meeting.

Next followed the report of the Budget Committee.

The report of the Budget Committee was regularly adopted, and the Budget was regularly approved by the Council.

Motion was then offered by Dr. Waugh that the Secretary undertake, through the secretaries of the district societies, to obtain en bloc subscription to the INTERNATIONAL JOURNAL OF ORTHODONTIA for the Society for the coming year.

The motion was carried.

Next was offered a resolution by Dr. Waugh as follows:

"WHEREAS, in modern dental education proprietary or privately owned dental schools without endowment and operated for profit have been eliminated. Only schools connected with universities and complying with university standards of education are recognized; and

"WHEREAS, only graduate courses organized and operated by and under the supervision of university controlled schools are considered reputable; therefore, be it

"*Resolved,* That the American Society of Orthodontists encourages and will support the development of additional graduate and extension courses in orthodontic instruction in universities of recognized standing."

Resolution was adopted.

A resolution was introduced by Dr. F. A. Delabarre, and subsequent to some appropriate and explanatory preliminary remarks, he offered the following resolution:

"WHEREAS, the health articles printed in many newspapers and other widely circulated publications often relate to the subject of malocclusion of the teeth and associated deformities; and

"WHEREAS, the advice given frequently is not in accord with the ideas and practices of orthodontists whose opinions are the result of many years of study, clinical experience and investigation; and

"WHEREAS, it is impossible to make broad, general statements of value on this subject, owing to the fact that there are no two cases alike and that many factors are involved in the analysis of each case; and

"WHEREAS, the main objectives of the orthodontic specialty are the prevention of malocclusion and the application of corrective treatment of malocclusion at the time which is most favorable for obtaining normal development; and

"WHEREAS, to follow incorrect advice may result in a postponement of necessary orthodontic treatment and thus be directly responsible for many cases of serious malocclusions and facial deformities which will result in irreparable damage to the patient as related to health and appearance throughout life; be it therefore

"*Resolved,* That the American Society of Orthodontists condemns the publication of advice concerning orthodontic treatment, unless such information is authoritative and of genuine value to the laity and of particular value to the person seeking information; and be it further

"*Resolved,* That the American Society of Orthodontists is ready and willing at all times to cooperate with publications in the matter of furnishing advice and information regarding orthodontic problems; and be it further

"*Resolved,* That a committee of three be appointed by the President to be known as the Public Relations Committee.

"The duties of this committee shall be: (1) to endeavor to prevent the publication of incorrect information concerning matters in the field of orthodontia; (2) to consult with editors of health columns and to cooperate with them in the preparation of material for

publication that will be of genuine value to the readers in the matter of prevention and treatment of malocclusion of the teeth; (3) to disseminate useful orthodontic information by contact with the public through the press, radio and by means of lectures before suitable groups; and be it further

"*Resolved,* That copies of this resolution be sent to the Journal of the American Dental Association and to the Journal of the American Medical Association requesting its publication in these Journals."

(Signed) B. E. LISCHER,
CHARLES R. BAKER,
ALBERT H. KETCHAM,
B. FRANK GRAY,
FRANK A. DELABARRE.

The resolution was adopted.

Dr. A. H. Ketcham of Denver then offered the resolution that Dr. John A. Marshall of the University of California be made an honorary member of the American Society of Orthodontists. Motion was carried.

The following resolution was offered as a standing resolution by Dr. F. A. Delabarre:

"(a) In justice to the patient, the reference of any case for ad interim treatment demands that the diagnosis, line of treatment and instructions for continuance of the service be furnished the second operator, who shall assume only the responsibility for intelligent conduct under such direction.

"(b) On the complete transfer of a case to a new operator, all of the essential data shall accompany the case, including the original models, diagnosis, line of treatment, x-ray pictures, prognosis, and present status of the work.

"(c) When a patient under treatment leaves the original operator for another for any reason, professional courtesy demands that the second operator shall communicate with the original operator to inquire whether there is any reason why he should not accept the case. If there is none, the patient's interests must still be protected by the transfer of all essential data as above."

Resolution was adopted.

The installation of officers was held:

President:	Dr. L. M. Waugh
Vice-President:	Dr. Paul G. Spencer
Secretary-Treasurer:	Dr. Claude R. Wood
President-Elect:	Dr. H. C. Pollock

Announcement of chairman and committees was made as follows:

Board of Censors:

Dr. W. A. Murray, Chairman,
Dr. C. B. Mott,
Dr. Harry L. Hosmer.

Budget Committee:

Dr. Walter Ellis, Chairman,
Dr. Oliver W. White,
Dr. Earnest Bach.

Revision of Constitution and By-Laws:

Dr. Frank Casto, Chairman,
Dr. Oren Oliver,
Dr. C. C. Howard.

Committee on Orthodontic Education:

Dr. E. G. Jones, Chairman,
Dr. Ben Lischer,
Dr. F. T. Murlless, Jr.

Publication Committee:

Dr. Vernon Fisk, Chairman,
Dr. William Murray,
Dr. O. W. Brandhorst.

Legislation Committee:

Dr. Lourie Porter, Chairman,
Dr. Allen E. Scott,
Dr. C. C. Howard.

Research Committee:

Dr. Milo Hellman, Chairman,
Dr. A. H. Ketcham,
Dr. George Moore.

Relief Committee:

Dr. George Anderson, Chairman,
Dr. H. A. Stryker,
Dr. J. A. Burrill,
Dr. Harry E. Kelsey.

Program Committee:

Dr. Joseph D. Eby, Chairman,
Dr. H. U. Barber, Jr.,
Dr. L. J. Porter.

Nomenclature Committee:

Dr. F. A. Delabarre, Chairman,
Dr. B. E. Weinberger,
Dr. B. E. Lischer.

Committee on Necrology:

Dr. Henry C. Ferris, Chairman,
Dr. Henry Hoffman,
Dr. B. Frank Gray.

Local Arrangements Committee:

Dr. George S. Callaway, Chairman,
Dr. Sidney E. Riesner,
Dr. Glen F. Young.

Inter-Relations Committee:

Dr. Joseph D. Eby, Chairman,
Dr. W. W. Woodbury,
Dr. Wm. Flesher,
Dr. John V. Mershon,
Dr. Lloyd S. Lourie.

Public Relations Committee:

Dr. R. C. Willett, Chairman,
Dr. Charles R. Baker,
Dr. F. A. Delabarre.

A motion was then introduced by Dr. F. A. Delabarre to the effect that "This Society should express by a rising vote its deep appreciation and many thanks to the retiring President and officers, the Local Arrangements Committee, to the Oklahoma Biltmore Hotel, the city of Oklahoma City, the Oklahoma State Dental Society, the Oklahoma County Dental Society, the Oklahoma Orthodontia Society, the Oklahoma City Golf and Country Club, the press, and the Chamber of Commerce; and that a communication be sent to the Honorable J. F. Owens expressing the appreciation of the Society for his appearance on the program, and for his kind expressions and numerous courtesies."

The motion was unanimously carried by a rising vote.

Dr. Frank M. Casto then made a motion that the acts of the officers, of the Executive Council, and of the various committees during the year be approved, which was regularly carried.

Then a motion was made and regularly carried, introduced by Dr. Frank M. Casto, that the minutes of the final session be adopted without being approved by the body.

Past President Flesher then expressed his appreciation and thanks to those serving on the Program Committee, the Local Arrangements Committee and other committees, and for the very excellent attendance.

President Waugh then said, "For the New York group, I want to say just one word, and that is that the New York Society, 134 members strong, are unanimous to have you come there. As the strictly American Society of Orthodontists, we have not met in New York for a quarter of a century. They want you to come. They want to merge their spring meeting with this, with all their influence and assistance."

Motion for adjournment was made and regularly carried, and the meeting adjourned at five-five o'clock.

DEPARTMENT OF
DENTISTRY FOR CHILDREN

DENTISTRY FOR CHILDREN

JOHN M. CLAYTON, D.D.S., KANSAS CITY, MO.

INTRODUCTION

WHEN dentistry for children is mentioned, I have found that most dentists think of it in terms of the seven- or eight-year-old child. This of course is children's dentistry, but if it is to be a real preventive dental service, it must be started earlier—at three years, or preschool age. When a child at this age is brought into the office for the first time with cavities in nearly all of his teeth, most dentists lose their courage. You know as well as I do what chance this child has of getting any *real* service in most dental offices. Yet we are responsible for these babies. The public has been educated to the idea that if the child is taken to the dentist at an early age, toothache, early loss of teeth, and all of these things can be prevented. It is up to us to practice what we preach. There is one alibi that dentists have for doing nothing, or maybe scooping out a little decay and filling these cavities, with some sort of cement (hoping the patient will not come back when the tooth aches) that I have heard so often that I have to mention it here. They tell the parents that they have such a great love for children and are so kind hearted that they just cannot bear to hurt them and therefore cannot fill these cavities. It seems so ridiculous that any man would let these children go through all the pain of a dying pulp, the abscess that follows, and the extraction, when the simple cavity could be prepared and properly filled with very little or no pain to the child. And then they alibi out of their responsibility that it is because they are so kind to children. Would you excuse a surgeon for not performing an operation that would save a child's life on the grounds that he had too great a love for children? It takes a greater love to do some of the things that are necessary for children than not to do them.

Along with the dentist's responsibility to children, comes public health dentistry, or the dental clinics for children. This is a big problem and is being cared for in various ways in different localities. It seems to me that there is not enough interest in the profession and too much is left to lay groups. We shall always have indigent children, and we had better get in and assume this responsibility as far as possible with the help of public-minded laity, rather than stay on the outside and be dictated to by these

*Read before the St. Louis Society of Dental Science, March 19, 1934.

people, who mean well but are not so well qualified as ourselves to handle the situation. Since there are so many things now in the air concerning government aid, state dentistry, etc., it is imperative that the profession give this matter some serious thought. No one seems to have any sort of plan or even an idea as to what should be done, but apparently something is going to be done.

Practically all the clinics over the country that have been working for any length of time for large numbers of children have concentrated their efforts on preschool children and children in the first three grades of school, or, in other words, children up to seven or eight years of age. This is merely getting back to the fact that it not only is cheaper but also allows for treatment of a greater number of children by preventing, rather than restoring, neglected mouths. They soon found that by attempting to care for all school children they were not able to make any noticeable improvement year after year, but by beginning with the young children and correcting the small defects, in a few years *all* the school children showed marked improvement—with the same amount of energy and expense on the part of the clinic.

I wonder if we should not profit by this experience when we think of panel dentistry. If the state must do dentistry, let it be for children up to seven or eight years of age, and at the same time instill into the child mind the necessity for regular dental service so that the child will make an effort to get this service for himself after this age. The adult work could then continue to be as it is at present, emergency work. This would have very little effect on any dental practice, as now constituted, and there would be a possibility for the dentists who do this work to get adequate pay.

I do not offer this as a plan to be adopted, but merely as a very rough idea that may or may not be worth thinking about.

ECONOMICS

The economic problem confronting the general practitioner who has attempted work for children has probably been the biggest hindrance to the progress of children's dentistry. If you can get the right point of view and explain it to your patients, children's work has the advantage over adult dentistry even in times of stress. The actual outlay of cash over a period of time is less than that required for extensive restorations, and it has the added advantage to the patient that the payments, although they come more often, are small. (The way people are used to buying things.) This in turn corrects the idea in the minds of many people that dentists charge exorbitant fees for their services, and permits more of the mass of people who supposedly cannot afford the services of a private dentist to fall into the class of private dental patients.

These regular dental visits beginning with young children have advantages to the dentist, also. The absence of laboratory fees with small supply bills and with the low cost of materials used makes it possible for the dentist to make more net per hour on time spent on these cases, when compared to his other work, providing, of course, he learns to do satisfactory work with-

out a great loss of time. The work must be done in such a way that it is practical for both the dentist and the child; it must be done properly so that it will not have to be replaced constantly, and it must be done in the shortest possible time. This, in turn, is beneficial to the small patient in that it simplifies the management of the child. He is not worn out by long, tedious operations, and it gives him pride in the success of the work without any great inconvenience to himself. Children, you will find, are much more appreciative of success and more discouraged with failure than adults. They will readily respond to your successes, but their confidence is quickly gone with your failures, in any undertaking.

The thought I wish to leave with you is, do not rush through your work with children to such an extent that the quality of work is endangered. Give some thought to child management and child psychology; and if necessary, change your operative procedure so that it will be practical for the cases as they actually are presented.

Most of the discussions and articles you hear or read about various technics and treatments for children, sound very beautiful and look good in print, but when they are actually applied to a three- or four-year-old youngster, who is an average patient (and there are very few ideal ones), they fall far short of the results expected. It is my belief that procedures which are best adapted to conditions that are unfavorable will give far better practical results in all average children than procedures that are adaptable only to the ideal cases.

The ability of the dentist to do good practical work for children and his ability to make money out of it are closely associated. I do not see how they can be separated; nor do I see how either can survive long without the other. For instance, if your operative work is a failure, you will not only lose the patient but lose your interest in children's work as well. You will avoid it because your conscience will not let you charge a fee for a service that you know you have not rendered or cannot render. On the other hand, if your operative work is a success, you know you have rendered the child a great service, and you can conscientiously charge a good fee. Getting the proper fee creates an added interest in this work (or any other work), and your interest plus satisfied patients will bring you more patients. Each time you will do the work a little better in less time and thus create a larger practice and income.

Dentistry for children is a broad subject, and it could not even be touched in one essay. In outlining what would be the most beneficial to you as general practitioners, I decided to discuss some of the operative procedures for the more frequent cases as they come into our offices. I do not offer these operative procedures as the "perfect technic" but merely as procedures that have been worked out successfully in several years devoted entirely to children, and thus found to be the most practicable. I am offering them to you in the hope that there will be something that will help you give children better dental service and at the same time make the work more remunerative to you.

However, before going to the operative work, I should like to discuss briefly child management.

CHILD MANAGEMENT

The importance of child management is very evident in dealing with children. The parent judges your ability almost entirely by how you manage the child and whether or not the fillings you put in "come out." To be able to make the visits of the child to your office pleasant and at the same time to do work that entails some discomfort require of the operator some understanding of child psychology. An operator may have developed a wonderful ability to diagnose and perfected his technic for treatment of children's teeth, but if he does not have the ability to get the confidence and cooperation of the child, his work will be a failure.

It is difficult to try to tell any one how to manage children, but there are a few principles that, I believe, if followed help in this work. In the first place, the children of today know more at any age than you think they do. The modern child with all his sources of information, such as the picture shows, radio, various teachers of music, dancing, athletics, etc., and modern transportation facilities, has developed a more mature mind at any given age than we had at the same age. So if you are judging children of today by the standards of your own childhood, you are underestimating their ability. It is natural for a child to want "to be big," or to be treated as if he were older than he really is. It is a compliment to him. In other words, do not stoop to the child's level but try to bring him up to your own level in your dealing with him.

Any one who attempts to coax or beg a child immediately places himself at a disadvantage, and will fail. Tell the child what is expected of him and why, be honest and use a little "horse sense," and the response will surprise you. The idea still prevails, especially among parents, that the plan of mental diversion, or trying to keep the child's mind on a fairy story or something apart from the dental work that is in progress, should be followed. This plan will work on children up to three years of age, but after that the thing you are doing is the thing they are the most interested in, and with a little explanation as you go along, the visit can be made pleasant. *Lead* the child mind, and have him thinking the things you want him to think, rather than try to correct some imaginary thing he thought of himself. If you do not take the lead, the child will; and then it is just a contest to see whether you have patience enough to take all he has to offer and at the same time do his dental work.

There are a few distinct types of children that respond to definite treatment. Dr. McBride classifies them as follows:

1. Timid and frightened child.
2. Bashful quiet child.
3. Temperamental and hysterical child.
4. Incorrigible child.

1. The frightened child responds best to kindness with explanation and encouragement. He has probably had some previous painful experience elsewhere and thinks this is to be a repetition of it. When he finds there is no pain with the first visit, he responds quickly.

2. The bashful type is not so common now as it used to be. The trouble is purely social. They are not worried about the dental work but are bothered because they come in contact with a stranger. They respond best to joviality or a little "kidding" to relieve their embarrassment.

3. The temperamental and hysterical child has learned that by these demonstrations he can usually have his own way. He will function only with reprimand. His fears are usually imaginary, and as soon as he finds out that it is not so bad as he has been told or has imagined, he becomes a different child. A threat of intentional hurt will many times quiet the hysteria so that quiet explanation can be begun.

4. A child who is incorrigible with a "chip on his shoulder," who will not open his mouth or do anything you ask him to do, must be told at once that he will do just as you dictate, either pleasantly or unpleasantly, just as he chooses. Begin at once. It is merely a matter of "calling his bluff." He will soon be convinced by your attitude that you mean business and will respond at once.

I have found by experience that with the possible exception of the first visit of some children it is best for the parent to be excluded from the operating room.

OPERATIVE PROCEDURES

There are two things that the operator must keep in mind when diagnosing cases of children. The first is that decay is primarily a disease of childhood, and your treatment should be such that it will carry him over his growing period with the minimum loss of tooth structure and the maximum resistance to decay, even if esthetics must sometimes be sacrificed for this short period of time. In other words, if you can preserve all possible tooth structure until the child's dentition is complete and the age of susceptibility to caries is past, you then have a chance to do, not only beautiful work, but work that will give him years of real service.

The second thing is that the teeth of children are in the process of being either built up or torn down. Teeth that are in the formative process will respond better to any sort of treatment than those that are being torn down. For example, a clean exposure of a first permanent molar with incomplete root formation can many times be successfully capped, while a deciduous molar with partial root resorption has less resistance to decay, will not tolerate pulp capping, and will not readily respond to root canal treatment.

The most important reason for filling deciduous teeth is to maintain good health. Early filling of small cavities prevents the systemic infection that is sure to come from deciduous teeth that are allowed to abscess from carious infection not corrected. Some of the other reasons are: to prevent pain, to preserve a comfortable masticating surface, to prevent toxic conditions, to

preserve the first permanent molars, to prevent malocclusion, to instill confidence in the child's mind at an early age, and to develop the habit of oral cleanliness and care, which includes regular periodic visits to the dentist.

In a general way, cavity preparation in deciduous teeth follows the best accepted methods used in permanent teeth, but, due to the difference in shape and structure of the deciduous teeth, there are some marked exceptions.

In deciduous teeth the enamel is more brittle and the dentin much softer than in permanent teeth. The pulp chamber is larger, giving a proportionately smaller area of hard tissue in which to shape the cavity. One of the greatest differences is the bell-shaped crown with the sharply constricted neck of the deciduous molar when compared with the permanent molar.

There is no short-cut way to prepare cavities in deciduous teeth, and the caries must be removed with the same care as that given the permanent ones. In the anterior deciduous teeth the same principles apply for cavity preparation as in permanent teeth, except that the central and lateral incisors of children four years of age and above, may be prepared by the Arthur method, which consists of cutting away the interproximal spaces, including most of the cavity, making the teeth wedge-shaped and treating with Howe's silver nitrate.

Pit and fissure cavities in the molars also follow the same generally accepted method of cavity preparation as the permanent molars except that in very young children it is not advisable to extend the cavity to include all the grooves, especially if copper amalgam is to be used as the filling.

The principal difference between cavity preparation in deciduous and permanent teeth is to be found in shaping compound cavities in deciduous molars. Since the crown of the deciduous molar is sharply constricted at the neck, if an attempt is made to prepare a square cervical base, there is a possibility of breaking through the enamel wall; also, if dependence is placed upon the square base for retention, the enamel being so brittle, any or all of the walls may give way under sudden stress. For this reason a wide step is cut usually with a slight dovetail, being sure that the preparation will allow enough bulk of filling over the axiopulpal angle so that the filling will not break at this angle.

In preparation of these cavities I prefer to reverse the usual procedure and excavate as much as possible with spoon excavators; then with a chisel I break down the buccal and lingual walls. With a round bur suitable to the size of the cavity the remaining caries is then removed. So far there has been no hurt and the child is not particularly fearful. The painful part of the operation, which lasts but a minute or two, is delayed until the last, that is, cutting across for the occlusal step. In doing this I use a small inverted cone bur seated in the occlusal pit, just through the enamel, and with a to-and-fro motion, finally working it toward and into the proximal. A cross-cut fissure bur is then placed in the occlusal pit and worked through to widen the step and finally dropped down to complete the proximal floor and wall. If the procedure is reversed and the step cut first, the patient will

be restless throughout the whole operation. If the step preparation is cut from the proximal into the occlusal, there is always a danger of involving the horn of the pulp during a chance movement of the child.

The filling material that is used almost entirely in our office for deciduous teeth is copper amalgam. Here are some of the reasons why: It may be used where thorough dryness of the cavity cannot be obtained; it does not irritate the gum tissue; it may be placed under the margin of a bleeding gum; it may be quickly and easily applied and the cotton rolls removed without waiting for the filling to harden; it may be placed nearer the pulp, without causing its death, than any other filling material. It needs less retention than silver amalgam; it has better edge strength than cements; it protects the margins from recurrent caries better than other filling materials; and it makes a hard filling that does not give under the stress of mastication. It also may be used in compound cavities without the use of a matrix.

As mentioned before, the dentin of deciduous teeth is less dense than that of the permanent teeth, so that any irritating filling placed too close to the pulp will quickly cause its death. As a base for practically all fillings we use a very thick paste made from zinc oxide powder and eugenol. This makes a white mix which is soothing to a sensitive tooth and sets very hard, making a nonconductive base for a metal filling when used as you ordinarily use a cement base. Usually, however, a small amount of silver nitrate solution is added to the mix, turning the color to gray, giving more sterilizing power to the mix, also hastening its setting. There are few deciduous teeth that cannot be comfortably and permanently filled with copper amalgam using a base of zinc oxide powder, eugenol, and silver nitrate.

Pulp capping is seldom satisfactory; so when the decay extends to the pulp, we prefer to devitalize immediately rather than wait until the tooth has become abscessed. First, a treatment of eugenol is sealed in for twenty-four hours to prevent the pain that might be present in devitalizing a hyperemic pulp. On the following day, a good exposure is made and a small amount of Lilly's desensitizing paste (Buckley's formula), or Novo wafer is placed so that there will not be any pressure upon the pulp. (Pressure causes pain.) This is covered with a pellet of cotton and sealed in with temporary cement and allowed to remain for four or five days, or even a week. With very few exceptions the pulp is dead on the return visit, and is removed with a large round bur, with no instrumentation in the canals. The cavity is then prepared and another treatment of eugenol placed for four or five days.

At the next sitting, after the saliva has been excluded and the treatment removed, the pulp chamber is swabbed with iodine and filled with a thick mix of aristol and glycerin or with permafix. This is then covered with cement, forming the base of the cavity, and filled with copper amalgam.

With the exception of a few very young children it is not advisable to try to save, for any length of time, a tooth that is abscessed and has a fistulous opening. Diagnosis is really the governing factor, rather than the technic of treatment and filling of nonvital deciduous teeth. Cases in which

the health of the child is not as it should be, or those in which the floor of the pulp chamber is not intact, or those cases with the fistulous opening high upon the gum tissue just opposite the bifurcation of the roots, or the cases with discolored adjacent soft tissues should not be attempted.

However, there are many cases where the second deciduous molar is abscessed a year or more before the eruption of the first permanent molar. Many times these deciduous molars can be preserved for this short time, and then after they are extracted, a space retainer placed to the permanent molar, thereby rendering the child a great service.

The first treatment of acutely abscessed deciduous teeth consists of opening the pulp chamber completely and removing as much decay as possible without causing pain. This is left open for a few days to allow drainage, at the same time the parent is instructed to keep food particles washed out of the cavity. Upon the return visit a treatment of creosoform or permafix is sealed in, to be repeated at not more than two subsequent visits when the tooth should be ready to fill. It is then filled in the same manner as described for devitalized teeth.

Since most of the deciduous teeth that have to be extracted are badly infected, and because of the fact that children object to the needle, we do not use novocaine except on older children. For the extraction of many anterior deciduous teeth, we use ethyl chloride spray upon the buccal side of the tooth, the effect being both local and general, the child breathing enough of the vapor until the nerve centers are affected. For other extractions ethyl chloride is used as a general anesthetic if the operation is short. Ethyl chloride is a wonderful anesthetic for children, and I could not get along without it, but there are some cases that are referred for nitrous oxide. There is no *best* anesthetic for children. The anesthetic should be chosen to fit the case, and the operator who is able to use all anesthetics well will have greater success.

There are still many operators who leave these abscessed deciduous teeth in the mouths of their child patients. To be sure, there is no pain if good drainage is established, but the infection is constantly going into the blood stream, causing damage to the child's health that is impossible to estimate.

In most cases when premature extraction of a deciduous tooth is necessary, it is advisable to place a space retainer, in order that the space will not close and the succeeding permanent tooth be forced out of proper occlusion. Sometimes these spaces do not close, but remain the same or even get larger; so it is our practice to take an impression at the time of extraction, instructing the patient to return in one month for comparison, and then at regular intervals for a year if no movement is noted. It has been my experience that if there is to be movement of the teeth on either side of the space, it will begin immediately after the extraction or during the eruption of the first permanent molar. In mouths that already have a decided spacing of the teeth, closing of the space is not so likely to occur as in those with tight contacts.

I have used many kinds of retainers, but the one used the past five or six years has been the most successful, probably because it is the simplest and most easily constructed.

It is my belief that the best filling for the first permanent molars is a gold inlay if it can be properly made. Since these molars erupt at the early age of six years, it would be both impossible and a drastic procedure to cut out all defective grooves and make proper cavity preparation for an inlay. For this reason we use the following prophylactic measures for those molars indicating defective groove formation. After the tooth is cleaned and dried with alcohol, Howe's silver reduction is applied. This stains the whole occlusal surface, but at the subsequent visit it will be found that all the stain is gone except those points where there is defective groove formation or the beginning of decay. These discolored spots, or in some instances, all the grooves, are then cleaned out and filled with copper amalgam or kryptex, if you prefer. These in turn are to be replaced when the child is older, with a small "spider inlay." In this manner silver nitrate is used as an explorer to find these defective grooves or beginnings of decay and so do them out in "black and white" before it would be possible to detect them with the ordinary explorer and mouth mirror.

In conclusion, let me appeal to you to accept the responsibility of child dentistry and to give the service to the people that they have a right to expect. If your work with children has not been as remunerative as your adult work, it is probably due to loss of time. Give some thought to child management, and with simplified technic that is adaptable to children, save this extra time without sacrificing the quality of the work.

THE FORM AND DIMENSIONS OF THE PALATE IN THE NEWBORN*

M. F. Ashley-Montagu, Ph.D., New York, N. Y.

INTRODUCTION

RECENT tendencies in the study of human biology exhibit an increasingly emphatic recognition of the fact that mass studies of large groups are significantly less valuable than studies made upon single individuals over long periods of time. Mass studies, it has long been felt, tend to smooth out significant individual differences and to obscure them; while consistent and prolonged studies made upon the individual tend to emphasize them by bringing them out in high relief. We have consistently borne this fact in mind in our work in the Division of Child Research at New York University, studying the developing child as an individual *sui generis,* rather than as a statistical function of a group of variates. We have in this division the opportunity of making a protracted study of a large number of children over a considerable number of years. The Division of Child Research is part of the preventive dentistry group wherein selected children receive dental and medical treatment and are studied, among other things, with respect to the growth processes involved in the development of their dental and associated structures. In addition, it is part of our plan to make a study of the evolution of these structures with particular reference to the evolution of normal and abnormal arch forms, and this paper represents a first report of peliminary work carried out in the Division of Child Research at New York University, on the form and dimensions of the human palate in the living individual. The work was undertaken at the request of Dr. F. L. Stanton, to whom many thanks are due for much help and valuable criticism. I wish also to thank Dr. Gustave Noback for reading this paper in manuscript and making certain suggestions which resulted in the clarification of a number of obscurities.

The study will begin with the fetus and conclude with the adolescent. Comparative studies will eventually be made with the sub-human primates, for whatever value they may transpire to have. The study of the fetal palate has been undertaken by Mr. B. Freiband of the Department of Anatomy and will be reported upon in due course, while I have undertaken the study of the palate of all subsequent ages.

The present communication represents an introductory preliminary report of the results of an investigation carried out on the palates of ninety newborn infants, the twofold object of which was first, to devise a valid method of measuring the palate, and second, to learn something of the form and dimensions of the palate of the newborn.

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It must be made unequivocally clear at the outset that this paper is no more than a preliminary report of results obtained during the process of experimentation with the problems involved in the development of a method of measurement and analysis of the growing human palate. It will remain for a future study based upon a larger amount of controlled material representing various age groups to deal more thoroughly with the study of the form and dimensions of the palate than we have here been able to do.

Before embarking upon the present investigation an exhaustive search of the literature relating to the growth and development of the human palate was made, and each contribution to the subject was studied and abstracted. The contributions relevant to the palate of the newborn are discussed later in this paper. In this place it is only necessary to say that as a result of reading these papers it became quite clear that while some work of permanent value had been done on the growth of the alveolar arches and a little on the palate, the foundations for an accurate study of the growth of the palate remained yet to be laid. For it is clear that if a reliable conception of the form and dimensions of any object is to be obtained, then a definite and accurate method of measurement must be employed to obtain it. In spite of the exemplary work of Franke[4] such a method has hitherto been lacking in the literature devoted to the study of the palate in the newborn, and thus it has devolved upon us as one of our first tasks to develop a method of measurement, the use of which would provide us with such data as would enable us to analyze as accurately as possible the form and dimensions of the human palate. The greater part of our labor so far has been in developing this method, which is shortly to be described.

To date the growth of the palate has been studied in our investigation only so far as it is displayed in the superficial soft structures overlying the bony palate; all measurements in this paper, therefore, unless otherwise stated, refer to the soft structures of the palate and not to the skeletal palate. For purposes of convenience, whenever necessary, I shall hereafter speak of the fleshy palate in our series as distinguished from the bony or macerated palate.

DESCRIPTION OF THE GENERAL MORPHOLOGIC CHARACTERS OF THE PALATE IN THE NEWBORN

In the newborn the fleshy palate differs in appearance, form structure, and dimensions, very appreciably from the bony palate; for example, in the newborn bony palate the posterior and posterolateral alveolar walls of the maxilla are but slightly developed. The bony posterior alveolar wall is almost altogether wanting, being represented only by a short horizontal plate of bone immediately inferior to the splenomaxillary fissure (Fig. 1). However, though there is very little bone here, there is nevertheless a very definite posterior wall present in an as yet unossified membranous form. Thus, it is evident that the general form of the alveolar body is more or less complete, although not completely grown at birth save for the fact that its posterior and lateral division is still membranous. Microscopic examination shows this mem-

branous tissue to consist of the usual dense white fibrous connective tissue (Figs. 2 and 3), in which bone will later undoubtedly be deposited. I shall hereafter speak of this membranous division of the alveolar body as the posterior membranous division of the alveolar body or more shortly as *pars posterioris* or posterior alveolar process.

Anterior to this membrane high up against the roof of the posterior alveolar horizontal bone plate lies a crypt, and within it the soft calcifying crown of the first permanent molar. The posterior alveolar membrane completes the alveolar body posteriorly. The posterolateral alveolar wall is characterized by its shortness, for at approximately the midpoint of the crown level of the second molar it ascends abruptly upward to meet the horizontal posterior wall forming as it turns a slight posterior lamina superiorly. (See

Fig. 1.—Photograph of the skull of a newborn child illustrating in particular the undeveloped condition of the posterior portion of the maxilla, and the relation of the latter to the pterygoid bone.

Fig. 2.) The medial wall of the alveolar body formed by the maxillopalatine processes is complete and in intimate contact with the pyramidal process of the palate bone. The pyramidal process descends slightly to meet the pterygoid bone. The anterior margins of the pterygoid laminae are situated some 5 mm. absolutely below the level of the occlusal surface of the posteromedial alveolar margin which represents the lowermost surface of the alveolar process in this region. In the adult the body of the pterygoid and the anterior pterygoid laminae are generally about 5 mm. above the level of the alveolar maxillary tuberosity, and this after considerable growth downward and backward of the posteroalveolar process has taken place. In the newborn, posteriorly, the medial palatine alveolar margin is almost on a level with the surface of the *pars horizontalis* of the palate bone. It is this characteristic which causes the whole palate of the newborn to appear somewhat flat even though it is

always considerably deeper anteriorly. This condition is closely reflected in the fleshy palate.

Upon dissection and correlation of controlled landmarks in the fleshy and bony palate of a single newborn individual, described hereafter as B. L., it was found that the postalveolar membrane borders upon the pyramidal

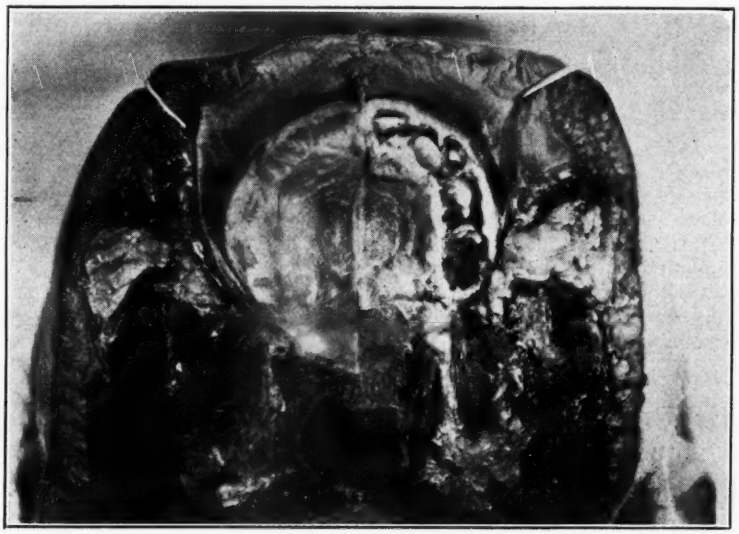

Fig. 2.—Showing a dissection of the left side of the palate, B. L. The postalveolar membrane may be clearly seen forming the posterior boundary of the maxillary alveolar process. The lateral margin of the maxillopalatine process on the left is seen to run continuously with the medial margin of the alveolarpalatine groove on the right.

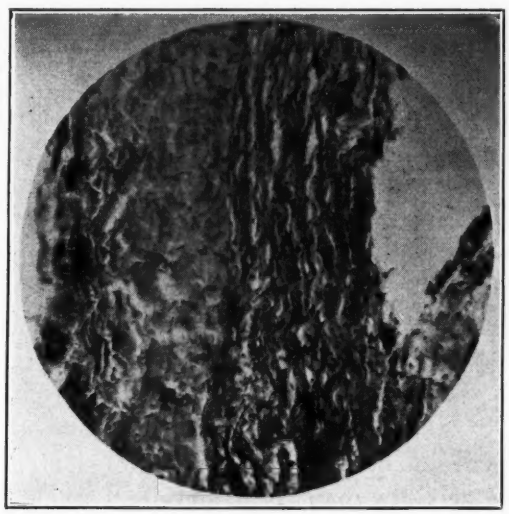

Fig. 3.—Photomicrograph of a typical section of the postalveolar membrane showing the dense white fibrous connective tissue in which the bone will later be laid down (×500).

bone and that in the fleshy palate this point of approximation occurs at the point at which the posterogingival process meets the palatine mucous membrane; in the fleshy newborn this point represents the posterior limit of the palate, just as the posterior alveolar membrane represents the true posterior limit of the newborn bony palate. The bony point we shall call the *postalveolon* and the corresponding fleshy point the *postgingivale.*

Since our study of the palate was made upon stone casts poured from compound impressions of the fleshy palate, it seemed advisable to discover whether the cast differed in any way from the fleshy specimen, and further, whether the projection of the cast differed in any way from these. A random case not belonging to our series of ninety was chosen for this purpose. The results obtained are given below. The cast examined was that of a female white cadaver B. L., one day of age. The general dimensions of the body are given in Table I.

TABLE I

GENERAL BODY DIMENSIONS, B. L.

Weight in grams	3,000.0	
Crown heel length	525.0 mm.	
Crown rump length	357.0	
Cephalic maximum circumference	325.0	
Cephalic maximum length	112.0	Cephalic index 81.0
Cephalic maximum breadth	90.0	
Nasion-prosthion height	28.0	

The three groups of figures in Table II were obtained upon the fleshy palate, upon the stone cast thereof by means of a sliding compass, and upon the projection of the cast (enlarged five to one), by means of a rule graduated to read in tenth-millimeters.

TABLE II

MEASURES OF THE PALATE, B. L.

	FLESHY	CAST	PROJECTION	DIFFERENCE F/P	DIFFERENCE C/P
Maximum breadth	37.1 mm.	37.1 mm.	37.3 mm.	–0.2 mm.	–0.2 mm.
Maximum length	29.5 mm.	28.7 mm.	28.9 mm.	–0.6 mm.	–0.2 mm.
Maximum posterior breadth	28.5 mm.	29.0 mm.	29.3 mm.	–0.8 mm.	–0.3 mm.
Maximum lateral sulcus breadth	31.1 mm.	31.4 mm.	32.2 mm.	–1.1 mm.	–0.8 mm.

It will be seen from these figures that there is very little variation between the measurements obtained upon the fleshy specimen, the cast, and the projection of the cast. The greatest variation is between the fleshy and the projected measures (F/P), the least between the cast and its projection (C/P). Experience confirms us in the belief that the projected measures are more accurate than those obtained by hand from the specimen itself or its cast. Curiously enough it is far easier to determine landmarks upon the cast than it is upon the fleshy specimen, so that measurements made upon the cast are likely to be far more reliable than those obtained upon the fleshy specimen. The projection of the casts is made most carefully by means of a precision instrument and yields, undoubtedly, the most accurate measures it is possible to obtain.

Before dealing with our series of palates and their characteristics, it is advisable to say something further concerning the appearance of a good cast made from a fleshy palate and, moreover, to give some indication of the relationship of the structures seen in the fleshy palate to those that exist in the bony palate.

In the newborn the fleshy palate has the appearance of a rather broad horseshoe, the lateral postgingival margins being somewhat convergent, although the medial postalveolar margins are actually very slightly divergent. As we have already seen, there is an abrupt ascent of the alveolus from about the midpoint of the deciduous second molar level of the alveolar body, and this it is which is responsible for the convergence and ascent of the lateral and inferior postgingival tissues toward the postalveolon. In the bony palate there is not even the appearance of this last mentioned convergence, of the posterior gingivae, but on the other hand, a very evident divergence of the postalveolar processes. (Figs. 4 and 5.) Thus, the so-called typical human palate is shown to be of typical anthropoid form in the human infant.

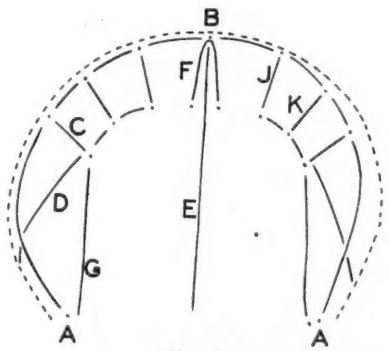

Fig. 4.

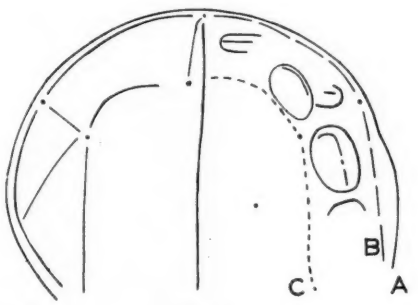

Fig. 5.

Fig. 4.—Projection of the cast of the palate of B. L., shown in Fig. 2 in the incisive postgingivale plane *A – B – A*. The dotted line represents the maximum buccal projection of the gingival arch; the line *A – B – A* the lowermost projection of the gingival process; *G*, the alveolar-palatine groove; *B*, the incisive point; *C*, the anterior sulcus; *D*, the posterolateral sulcus; *E*, the median palatine raphe; the dot opposite and below *E* marks the site of the maximum palatal height; *F*, the incisive papilla; *J*, the anterior sulcus; *K*, the anterolateral sulcus.

Fig. 5.—Projection of the palate of B. L. in the same plane as Fig. 4 exhibiting the structures on the left side which have been exposed by dissection. *A*, The maximum buccal projection which is upon a lower plane than that on the opposite side; *B*, lateral maxillary margin of the alveolar process; *C*, medial maxillary margin of alveolar process. The visible outlines of the deciduous dentition are shown in situ, the central and lateral incisors and the canine lie anterior to the lateral sulcus; the position of the canine is worth noting. The first molar lies immediately posterior to the lateral sulcus, and it is traversed medially by the posterolateral seen posterior to the first molar. It is important to note the relative divergence of the medial and lateral maxillary margins of the alveolar process. Compare with Fig. 4.

The depth of the gingivoalveolar process at various points may be gathered from the typical figures given in Table III.

TABLE III

DEPTH OF GINGIVOALVEOLAR PROCESS, B. L.

	FLESHY	CAST
Lateral incisive point	6.0 mm.	6.5 mm.
Lateral sulcus point	5.0 mm.	5.5 mm.
Molon point	6.0 mm.	5.7 mm.
Postlateral sulcus point	2.0 mm.	2.0 mm.
Postgingivale	0.1 mm.	0.2 mm.

The figures in Table III give the total depth of the gingivoalveolar process from its junction with the roof of the vestibule to the inferior surface of the process at (1), the *lateral incisive point,* which is defined as the point upon

the inferior surface of the gingivum immediately lateral to the anterior margin of the incisive papilla; at (2), the *lateral sulcus point,* which is defined as the point at which the central gingival arch crosses the lateral sulcus, which latter is defined as a marked inflection upon the occlusal surface of the gingivum which is situated immediately distal to the site of eruption of the deciduous canine and immediately mesial to the site of eruption of the deciduous first molar; at (3), the *molon point* or *molare* which marks the lowermost point of a broad conspicuous swelling of the gingivum, situated upon the site of the first deciduous molar, limited in front by the lateral sulcus and behind by (4), the *posterolateral sulcus,* which latter is seen as a weak obliquely oriented inflection upon the body of the gingivum immediately distal to the site of eruption of the second deciduous molar, and finally, (5), at the *postgingivale.* It will be seen from these figures that the gingivoalveolar process appears to be deepest in front, and gradually diminishes in depth until the molon point is reached, when it quite abruptly undergoes a rapid decrease as it ascends to meet the postgingival structures upon a plane at the postgingivale.

The transverse breadth of the gingivum at these points, taken from the medial lingual gingivopalatine groove to the lateral buccal margin of the gingival process, is given in Table IV.

TABLE IV

BREADTH OF GINGIVAL PROCESS, B. L.

	FLESHY	(DEPTH)	CAST	(DEPTH)
Lateral incisive point	4.9	(6.0)	4.5	(6.5)
Lateral sulcus point	6.2	(5.0)	6.2	(5.5)
Molon point	7.5	(6.0)	7.6	(5.5)
Postlateral sulcus point	6.7	(2.0)	6.8	(2.0)
Postgingivale	2.0	(0.1)	2.5	(0.2)

The figures in Table IV show that the gingivum is broadest at the molon and that the greatest breadth of the gingivum lies in the region between the lateral sulcus and the posterolateral sulcus. It will be observed that the breadth decreases gradually posterior to the posterolateral sulcus to about 2 mm. at the postgingivale.

It seemed desirable to know how far below the alveolus the gingivae or gum pads extended, i.e., craniocaudally. The gum pad of the fleshy palate, B. L., was therefore dissected on the left side until the bony maxillary alveolus, which corresponds to the level of the horizontal membrane of the reduced enamel epithelium, was exposed. The depth of the gingival tissues below

TABLE V

DEPTH OF GINGIVUM BELOW THE MAXILLARY ALVEOLUS, B. L.

	FLESHY
Lateral incisive point	4.2 mm.
Lateral sulcus point	3.0 mm.
Molon point	5.0 mm.
Postlateral sulcus point	3.9 mm.
Postgingivale	2.0 mm.

the level of the bony maxilla or the crypt at the various designated points is given in Table V. (See Fig. 6.)

In each case the tooth lay in its crypt 1.0 mm. above the level of the horizontal surface layer of the enamel epithelium, with the exception of the first permanent molar the crown of which rested within its crypt posterior to the second deciduous molar about 5 or 6 mm. above the enamel epithelium level.

The length and breadth of the crypts, the length being taken mesio-distally from wall to wall of the crypts at their gingival surfaces, are shown in Table VI.

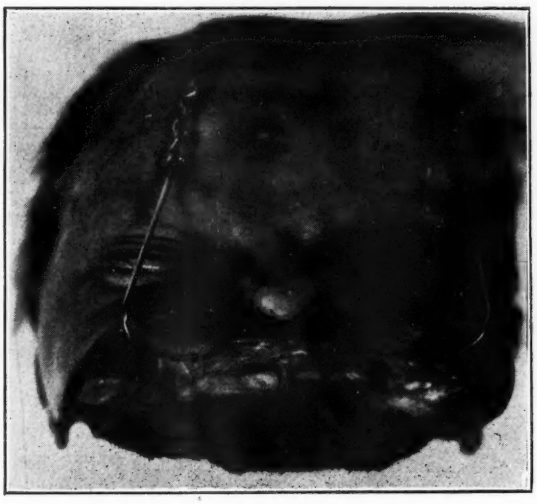

Fig. 6.—Case B. L. On the left side the gum pad has been dissected away to the level of the bony maxilla in order to show the depth of the gingivum. The teeth are within their crypts and, therefore, cannot be seen.

TABLE VI

LENGTH AND BREADTH OF CRYPTS

	CRYPTS	
	LENGTH	BREADTH
Central incisor	5.3 mm.	4.1 mm.
Lateral incisor	5.2 mm.	4.0 mm.
Canine	4.0 mm.	3.5 mm.
First molar	7.0 mm.	5.2 mm.
Second molar	6.1 mm.	6.5 mm.
First permanent molar	4.1 mm.	5.9 mm.
Total crypt length	31.7 mm.	Total crypt breadth 29.2 mm.

The central incisor and the canine lie anterior to the lateral incisor, the canine occupying a short triangular crypt. The molars do not lie with their crowns parallel to the horizontal surface of the reduced enamel epithelium, but rather with their distal surfaces tipped slightly upward, this accounts for the ability of a crypt to accommodate a tooth the breadth of which is greater than the breadth of the crypt.

When the figures in Table III are compared with those in Table V it will be observed that the greater portion of the alveolar body as seen in the

mouth is made up of the gum pads, of soft tissue, and that the maxillary processes contribute but a small portion of substance to the actual body of the gums below the level of the vestibule or roof of the mouth. Table VI shows that anteriorly and anterolaterally the maxillary process contributes about 1.9 mm. to the depth of the alveolar body, at the molon about 1 mm., at the posterolateral junction but 0.2 mm., and nothing at the postgingivale.

TABLE VI

CONTRIBUTION OF BONY AND SOFT TISSUES TO THE DEPTH OF GINGIVOALVEOLAR PROCESS, B. L.

	BONY	SOFT TISSUES	TOTAL PROJECTION
Lateral incisive point	1.8	4.2	6.0
Lateral sulcus point	2.0	3.0	5.0
Molon point	1.0	5.0	6.0
Postlateral sulcus point	0.2	1.8	2.0
Postgingivale	0.0	0.2	0.2

As has already been observed the body of the fleshy palate presents the form of a rather broad horseshoe. This appearance is due to the converging posterolateral gingival margins. The converging posterolateral margins of the gingivum disappear into the mucous membrane of the lateral margin of the soft palate, which is here expressed by a fold to the formation of which the underlying pterygoid bone together with the internal pterygoid, superior constrictor and buccinator muscles contribute. This fold curves slightly upward and outward to become continuous with the glossopalatine fold. It may be called the *superior postgingival fold.* The posteromedial lingual margins which form the lateral margins of the medial gingivopalatine groove posteriorly, are slightly divergent. They correspond to the posterior medial maxillary alveolar wall.

The alveolar palatine groove lies immediately lateral to the lingual maxillary alveolar wall of the skeletal palate and corresponds to the crypt level. The groove is but slightly marked posteriorly, and medial to the midpoint of the second molar is hardly distinguishable; from this point, however, it becomes quite deep and is directly continuous with the oblique lateral sulcus, which latter is represented upon the gingivum as a deep inflection which runs obliquely forward in an anterolateral direction to become continuous with the lateral frenulum. From this point the groove, which becomes very shallow and is generally seen overlaid by the well-developed anterior palatine rugae, turns abruptly medially to meet the posterolateral margin of the incisive papilla, and may be regarded as becoming continuous at this point with the furrow created by the lateral margin of the incisive papilla to emerge upon the buccal surface through the incisive sulcus which divides the gingivum at the incisive point into two halves. At this point the incisive papilla, which posteriorly extends slightly over the alveolar palatine groove to become continuous with the median palatine raphe, meets the superior labial frenulum with which it is continuous. An additional groove (the *dental groove*) will be described later.

In the case of B. L. the alveolar palatine groove is 9.3 mm. distant from the median palatine raphe at the point at which the anterolateral sulcus meets

the groove; opposite the molon the groove is situated 10.4 mm. from the median raphe, at the posterior sulcus 10.4 mm., and opposite a point slightly anterior to the postgingivale, 11.1 mm., from the median raphe; the figures for the right side are almost identical.

The importance of the alveolar palatine groove is that its medial margin is formed entirely by the lateral margin of the maxillary palatine process from which the lingual alveolar wall arises lateral to the gingivopalatine groove which runs between it and the maxillary palatine bone. (Fig. 2.)

The gingival process is generally characterized by a number of more or less conspicuous inflections or sulci. In the cast these sulci simulate the appearance of the diastema between the teeth, while the bodies between these sulci have the appearance of teeth which are but slightly overlaid by mucous membrane. Actually, as we have already seen, the teeth lie far above these surfaces in their crypts. These sulci are situated upon the labiobuccal portion of the gingivum, and upon dissection of two cases it has been determined

Fig. 7.—Photograph of the cast of the fresh palate, B. L., shown in Fig. 2. In this instance the posterolateral sulcus happens to be the most conspicuously developed. The lateral sulcus on the left side may be seen but that on the right is only faintly marked, exactly reflecting the conditions in the fresh palate.

that they correspond exactly to the walls of the crypts that separate the developing teeth from one another. That is, these sulci actually do correspond to the diastema of the deciduous teeth as they lie in their crypts.

The sulci which may generally be observed upon the body of the gingival process are the following: (1) the anterior, (2) the anterolateral, (3) the lateral, and (4) the posterolateral.

The anterior sulcus is situated laterally to the incisive sulcus which divides the gingivum at this place, and lies immediately distal to the distal margin of the site of eruption of the central incisor. It is more often than not but faintly marked. It runs almost parallel with the incisive papilla to meet the dental groove (loc. cit.).

The anterolateral sulcus is similarly generally somewhat inconspicuous and runs down obliquely to meet the gingivopalatine groove immediately distal to the site of eruption of the lateral incisor.

The lateral sulcus is generally quite the most pronounced; it is continuous with the lateral frenulum on the buccal surface and on the alveolar palatine surface with the alveolar palatine groove. It is situated immediately anterior to the mesial margin of the site of eruption of the first deciduous molar, and immediately distal to the distal margin of the site of eruption of the canine.

The posterolateral sulcus is the only one of the sulci which does not correspond in its orientation to an underlying crypt wall. This sulcus, which is generally quite a superficial one, may usually be seen extending from the buccovestibular margin of the gingivum, at a point which corresponds approximately to the distal margin of the second deciduous molar. From this point the sulcus proceeds obliquely upward and across the molon generally to meet the lateral sulcus at the gingivopalatine groove. (Fig. 7.)

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(To be continued)

FUNCTIONS OF THE COMMITTEE FOR DENTAL HEALTH SURVEY*

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THE recent phenomenal growth of dentistry as an art and a science is a subject which it is not necessary for me to mention to such a representative group as this; yet with all of our advancement along scientific lines, no concerted attempt has been made to place dentistry in its proper sphere as a health agency.

President Roosevelt, in his message to the seventy-fifth annual dental meeting in Chicago, said:

" . . . Through individual and organized effort this profession has made wonderful advancement, and dentistry is now generally recognized as one of the most important and necessary divisions of health service.

"May I express the hope that this progress will continue and that even further ways of making the dental health service available for all of our people will be found. . . ."

In almost every dental publication and in many items concerning dentistry in the daily press you will find mention of the value of dentistry as a health measure or of dentistry's place in health organizations, but until a year ago the American Dental Association had made no concerted effort to determine just what that place should be or the need for any such organization.

At the seventy-fourth annual meeting of the American Dental Association in Buffalo in September, 1932, a recommendation was presented to the House of Delegates by the chairman of the Legislative Committee, that a survey of existing health organizations be made by a committee of the American Dental Association, and that a flexible program be accordingly created to meet the needs confronting the profession. After being referred to and recommended by a reference committee, the House of Delegates instructed the president of the Association to appoint a committee to make such a study and to report its findings to that official body.

Dr. G. Walter Dittmar, who was then president of the Association, appointed this committee which was known as the Committee for Dental Health Survey. It consists of thirty members, geographically distributed throughout the country. Nine of its members were selected to form the Executive Council through which the Committee functions. The duties of the Committee are as follows:

1. To conduct a survey of dental activities in state, city and local health, educational and welfare departments and state institutions.

*Read before the New York Society of Orthodontists, Nov. 21, 1933.

2. To conduct a survey to determine the dental needs throughout the United States (this survey to be confined to kindergarten and grade school children, and selected adult groups in institutions, where practicable).
3. To develop and recommend a feasible dental program for state, county and city health educational departments and organizations, based upon the findings of the completed surveys outlined in items 1 and 2.
4. To submit a report of the findings and recommendations to the House of Delegates for their action.

During the late fall and early winter months of last year, Dr. Dittmar made several trips to Washington to consult with Surgeon General Hugh S. Cumming of the U. S. Public Health Service in an effort to obtain assistance in carrying on some of the functions of this committee. The matter was also laid before the Association of State and Provincial Health Officers, which is an organization composed of all state health commissioners. As a result of these contacts, a conference was held last April in Washington which was attended by all of the Executive Council of the Committee for Dental Health Survey, the surgeon general and other officials of the Public Health Service, and a committee appointed by the president of the Association of State and Provincial Health Officers. This latter association endorsed the program initiated by the American Dental Association and offered its hearty cooperation and support.

At this conference the Public Health Service agreed to assist the American Dental Association to

1. Conduct a survey of dental activities in state, city and local health, educational and welfare departments and state institutions.

The Public Health Service also agreed to assist in a survey to determine the dental needs, in case a definite plan for such a survey could be formulated. Immediately after this conference, officers of the Public Health Service, who are also members of the Committee for Dental Health Survey began to survey state health, educational and welfare departments and to correlate all available data regarding dental activities and facilities in those states. Up to the present time personal visits have been made to the states of Virginia, Maryland, Delaware, New Jersey, Pennsylvania, Rhode Island, Connecticut, Vermont, New Hampshire, Maine, Massachusetts, Ohio, Indiana, Michigan, Wisconsin, Minnesota, North and South Dakota, New Mexico, and Arizona. Only a few of the remaining states (about six) need be surveyed personally due to the fact that the other remaining states do not have any dental health or educational activities in any department of their state government. It is believed that this phase of the project may be completed early next summer.

The Public Health Service is making this fact-finding survey of existing facilities without the aid of the organized dental profession, but when it is finished the completed report will be turned over to the American Dental

Association. Although dental programs in many state organizations have been curtailed or eliminated during the past two or three years because of economic conditions, the investigators are recording all activities that were carried on during the last five-year period, and in this way it is believed that all recent programs will be included in the report.

The survey so far has disclosed that dental health activities may be found in three major departments of a state government and under various independent commissions. So far the results show no two states or no two departments of state governments with similar dental programs. Of the twenty states already surveyed, we have found forty-two separate dental activities of some nature or other located in different departments or commissions throughout the various state governments. Four of these are administered and supervised by dentists, two by oral hygienists, and thirty-six by physicians, nurses or school authorities. Four of these states, through their departments of health, furnish administrative, educational, and some clinical service under the direct supervision of a full-time dental health officer. Other states support only educational functions administered by physicians, hygienists or nurses.

Clinical service for school children and preschool children is supplied by the state departments in three of these states, although this service is not available to all sections. In two of these states this service is largely self-supporting, due to the collection of fees of 50c per operation. Owing to the fact that it is practically self-supporting, very little treatment is rendered for the indigent. In other states, prophylactic service is furnished to the school children, preschool children or both, the entire cost being borne by the state departments of health.

Dental service in state institutions, such as state penitentiaries, sanatoriums, etc., varies in every conceivable manner from complete dental service furnished free to all patients or inmates by a full-time staff dentist, to no dental service other than emergency treatment for the relief of pain furnished by a nearby practicing dentist called in for the occasion.

In the states where the major dental health activities are carried on by local agencies, such as dental societies, welfare agencies, local health organizations or local school boards, the dental health service is found to be spotty and of varied character. One school district, city or local organization will maintain an efficient program, while in an adjoining community no dental health activity of any kind will be found. Usually this state of affairs is directly dependent upon the attitude and action of the local dental organization.

Thus, you can see that the administration of dental health activities is sorely in need of intensive study on the part of the organized dental profession, as well as other health groups. When the survey is completed and the data thus acquired become available for study and comparison, it is believed that a definite program can be formulated.

It was for this reason, primarily, that the Association of State and Provincial Health Officers became interested in this survey. Heretofore dental health activities have been allowed to grow and expand or to be reduced or eliminated entirely without any encouragement or protest from organized dentistry. As a result of this we now have the forty-two different methods previously mentioned, very few of which are similar. When this matter has been given serious consideration by the organized profession, and definite recommendations and programs based on logic and facts are endorsed by the American Dental Association and the Association of State and Provincial Health Officers, it should then be possible to secure for the dental profession its proper place in health organizations. This is a serious matter with state health officials. These officials are interested in the development of dental health service and in the dissemination of dental health information, and they will welcome a well-thought-out plan as to what the dental service should be, the extent of the service, and how it should be administered. To know that these principles are endorsed and sponsored by the organized dental profession, and that the health officials of the state, city or county can expect cooperation and support from each state dental society, will stimulate the adoption of such reports by state health officials.

Although this phase of the survey has not yet been completed, the need for definite correlation and organization has been thoroughly demonstrated. Notwithstanding the fact that some states are at present handicapped by reduced appropriation, there is every evidence of a need for concerted action on the part of the dental profession to stimulate and initiate an adequate dental health service to meet the needs of the various communities.

But what are the needs? How would it be possible to outline an adequate health program of any nature until the actual needs were known? Undoubtedly authentic data are available and some can be correlated and used, but practically all have been acquired by different methods. By far the majority of oral examinations of the various surveys reported are not made by dentists, and the difference is clearly demonstrated in records compiled from health departments already surveyed. Where dentists or, possibly, trained oral hygienists make the examination, the percentage of dental caries recorded is much higher than when the examination is made by physicians, nurses, teachers, or social workers. Naturally the dentist is trained to find abnormalities of the teeth and jaws. Unless the dentist makes the examination, practically no mention is ever made of malocclusion with its resulting deformities.

In one state already surveyed the state law requires a complete physical examination, including x-ray pictures, each year for all children of school age. For this purpose the state appropriates one dollar and fifty cents per child. A dental examination is always included; but is the dentist called in, as are other specialists, to help make that examination? You are right, he is not, except in isolated cases. As a result, how are these examinations made? Usually a glance in the mouth, using an applicator to retract the tongue or cheeks. These reports show 30, 40 or 50 per cent of these children in need of dental care.

NEEDS

The problem of arriving at an estimate of the dental needs is a large one. For this reason the matter was given careful consideration by the Committee for Dental Health Survey and the officials of the American Dental Association, and no step was taken until after the whole program was placed openly before the House of Delegates at the Chicago meeting last July. It was realized that such an undertaking could not be accomplished for the entire population, but must be limited to certain groups. Children of school age naturally lend themselves to such a program because they are confined in certain definite places for a certain definite period.

The problem of how the examination should be made and who should make it was a large one. Unquestionably, it would have to be executed by the organized dental profession. Would the organized dental profession actually make these examinations and could an examination blank be formed that would be simple and yet at the same time give the information required? And, not the least of all, by any means, would the various societies accept such an examination blank with the understanding that all examinations, no matter where they were made, must be uniform? Would it be possible to select certain areas in certain states, including rural, urban, mining, and industrial communities, that would be a true cross-section and that could be studied as a nation-wide survey?

All these matters were given careful consideration, and when the entire committee met at Chicago in August, they were discussed in detail. As a result, a definite program to carry out the second phase of the duties of this committee was laid before the association. The House of Delegates gave its approval and instructed this committee to "conduct a survey to determine the dental needs throughout the United States (this survey to be confined to kindergarten and grade school children, and selected adult groups in institutions where practicable)."

Surgeon General Hugh S. Cumming agreed to assist the American Dental Association in this study in that the Public Health Service would furnish and distribute all examination blanks and compile the data thus recorded. These data are to be turned over to the American Dental Association to be studied in conjunction with the data from the report of the fact-finding survey of facilities and activities in state, city and local health, educational and welfare departments and state institutions.

Immediately after the meeting in Chicago the machinery for conducting this survey was set in motion. All state secretaries were advised of the contemplated nation-wide survey, and the cooperation of their state societies was solicited. The committee members scattered throughout the country were of great assistance in stimulating local interest. Definite instructions for organization of district or local dental societies were submitted with the recommendation that one individual be appointed in each state through which all communications should be sent. It was also recommended that either the secretary of the state society or the chairman of the state oral hygiene com-

mittee, or perhaps the dental director of the state board of health, in case such a person was included in the state organization, be selected as this state representative.

Fortunately several states were contemplating such a survey in the near future, and so an immediate and happy response was received in answer to our communications. Within a few days a meeting was held in Washington at which the dental directors of the state boards of health of Virginia, Maryland, and South Carolina were present. A definite program was established for these states. New Jersey had been contemplating such a survey and offered its cooperation.

Minnesota was next, and possibly has led all other states in the speed with which her efficient state dental organization was set up. Minnesota, by the way, is making a state-wide survey, and, from the number of examination blanks which we have sent into that state, I believe every child of school age will be given a dental examination.

On the 14th of this month, hardly three months since this study first began, 19 states had promised cooperation in this survey, and several others are now awaiting an early meeting of their board of directors or trustees or state society meetings before definite acceptance can be given.

States that are well organized into district or component societies encounter very little trouble in setting up their organizations. Unfortunately, some southern states and those in the southwest and the Rocky Mountain states are not so organized. This is not true of Colorado, however, as that state has given splendid cooperation. Even in most of those states whose organizations are not adequate to make a state-wide examination, we have received replies offering assistance in the few cities where dental societies exist; but unless we can obtain a varied sample of the population in a particular state, we would prefer not to undertake any examinations in that state.

Most states are handling this organization through the chairman of the state oral hygiene committee. This chairman either calls a meeting of his committee, consisting of one member from each district or component society, or sends literature (furnished from my office) to each member. This district or component member of the state oral hygiene committee appoints a chairman in each county or local society and sends him the literature in order that he may acquaint his local group and obtain their cooperation.

As the Association of State and Provincial Health Officers has already endorsed this survey, the state commissioner of health is ready to lend his hearty cooperation. Usually the state commissioner of education is approached, and so far as I know has always endorsed this program. Armed with these endorsements, the local city or county health officer and the board of education are asked by the local society to cooperate in this survey and to set a time when these examinations can be made by the local dental society throughout their community. Then the local dental society invites all its members to take part in making these examinations and definitely assigns certain examiners to certain schools on designated dates.

Using the examination blanks which have previously been sent in any amount required to the county chairman, it is possible for each examiner to examine from 75 to 125 children per day, using a mouth mirror and explorer. If all society members cooperate, the examinations are soon over.

At the time examinations are made, our committee recommends that the local society make arrangements for the parent of the child found to be in need of dental treatment to be notified to that effect. This notice is to be signed by the teacher and either mailed to the parent or sent to the parent by the child. A suggestion for this notice is as follows:

NOTICE

School

An examination of the mouth of your child ———————— discloses the urgent need for dental treatment.

You are advised to take the child to your family dentist without delay. Periodical visits to the dentist at least twice a year will save time, pain and expense.

———————————

(Principal or Teacher)

When these examinations are finished, they may be tabulated by the local society, if they care to have this information immediately, or the examinations may be returned directly to us or through the state representatives to our office. As soon as they are tabulated, the information will be available to any unit making the examinations. As soon as final tabulations are made they will be correlated and turned over to the American Dental Association.

On November 14 one million two hundred thousand examination blanks had been distributed, and this encourages us to believe that at last we shall have comparable data, compiled by the American Dental Association, which will show us the extent of the dental needs of the children of school age throughout the length and breadth of our nation. These examinations will be made on a uniform examination blank and will be recorded by dentists using mouth mirrors and explorers. They will include children of all ages from all strata of society. No longer can it be said, as it was at the last White House Conference, that the dental profession cannot present authentic data of the true dental needs.

From the results already obtained in the three months since we first started to create this organization for determining dental needs, we can assure you this survey will be a success. Before the end of the school year we shall have in our own hands, examinations of hundreds of thousands of school children and we should be able to determine:

1. What percentage of school children are in need of dental treatment.
2. Whether the child has ever received dental treatment.
3. Number of deciduous and permanent teeth which have been filled.
4. Number of extractions, fillings or prophylaxes needed.
5. Number of missing teeth and at what age they were lost.

6. Condition of supporting tissues surrounding teeth.
7. Whether or not orthodontic treatment is indicated as a health measure.
8. Extent of malocclusion and whether or not it is present.
9. A comparison which should give us a definite answer as to whether or not backward children might be influenced by bad teeth.
10. The prevalence of dental caries and at what ages and what surface of the teeth it first attacks.
11. Whether or not geographical location or environment influences dental pathologic conditions.
12. Extent of benefits to the school child in communities where dental health education is given a prominent place in community life.

And the answers to a hundred other questions that are now obscure.

When these two surveys have been completed, they will be turned over to the American Dental Association. It will then be the duty of the Committee for Dental Health Survey to:

> Develop and recommend a feasible dental program for state, county and city health educational departments and organizations, based upon the findings of the completed surveys outlined in items (1) and (2), and
>
> Submit a report of the findings and recommendations to the House of Delegates for their action.

The Public Health Service will have no part in the above duties of the committee. Its cooperation in the first two studies was given because, in the interests of the health of the nation, it believes these fact-finding surveys are necessary, and it hopes and believes that the dental profession will develop a program sufficient to meet the needs, at least in part.

Just now we are confronted with impending changes which may govern to a great extent our present-day civilization. In the biologic world it is those individuals or species with a high degree of adaptability that successfully survive. Those who refuse or who cannot adjust themselves to the changed environment must perish.

The action of the organized dental profession in resolutely facing the situation and making an attempt to solve the problems by an intelligent regimentation of scientific data, is one of the most encouraging signs that dentistry as a profession will endure and will advance in the future with the same progress it has made in the past.

DISCUSSION

Dr. Frank A. Delabarre, Boston.—As a member of the Committee, I have a responsibility to carry to this body to convey to you the tremendous responsibility of orthodontic practice. Dentistry is looking forward to taking its place as a health measure, and every one of you here is convinced that your life work was undertaken for the primary reason of giving the child better health and dental function.

If we could take care of caries before the child came to us, it would reduce our particular orthodontic problem 100 per cent. This is the first time in the history of the world that any nation-wide survey on a magnitude such as this has been attempted, and its

particular value is going to lie in the fact that we shall have comparable figures from California to stack up with those from Massachusetts and Oregon, and everywhere else, to tell us in cross-section what different needs there are in this country.

We have had surveys in different localities which cannot be correlated because they were taken under different conditions. So, I appeal to you as orthodontists to back this. It means a tremendous thing to you as members of the dental profession, and I am glad this Society represents the country from Washington to Buffalo and Maine, embracing so many different states. Every state ought to fall in line and do its level best to make a survey of the dental needs in its state.

I never have run up against a problem that holds out such a tremendous influence on dentistry as this does. It is going to tell us definite things, and I have a definite idea—but I will not tell you what it is—what some of those things are going to be. Whatever they are, they will be interpreted in a way that will enable the dental profession to give more efficiently a service to a larger number of children and to direct its effort to the new objective of health. It will mean a reorganization in our professional activities all through the nation because we are going to get some unmistakable facts from this survey.

Every one of you, no matter what state you come from, is a member of your state society. Use your influence as orthodontists in this body to stimulate your state to take up this work and do an efficient job.

It was my pleasure in Oklahoma City at the meeting of the American Society of Orthodontists, to make a contact with the state society meeting at the same time, and I met the man appointed to undertake this survey in Oklahoma, and they are on the job and they are going to do a good job.

We are very fortunate in having the United States Public Health Service to join with us in this and make it possible to make a nation-wide survey which is going to be so important for the American Dental Association.

In these troublous times of distress and the threat of socialization of the health professions, we are going to get data that are going to help us tremendously to combat the socialization of dentistry.

Dr. Leuman M. Waugh, New York City.—I have known something of the steps which led up to the acceptance of this plan, and I cannot refrain from saying just a word of appreciation at this time to the United States Public Health Service through its Surgeon General, Dr. Cumming, and through the Chief of the Dental Division, Colonel Messner.

This is a time when all government appropriations are seriously cut, the Public Health Service with the others, and yet it is a time when the Surgeon General and his Chief of the Dental Division, have felt that this expenditure of money and of energy of the staff was of such great importance to the health of the American people that they eagerly and enthusiastically have taken up this work.

The Public Health Service has shouldered a burden of responsibility and, more than that, a burden of expense that the American Dental Association was utterly incapable of shouldering at the present time, even though they as dentists knew what it would mean to the health of the people.

Those of us who had the privilege of hearing the address of the Surgeon General at the opening exercises of the American Dental Association in Chicago, know just how valuable he feels this dental survey is going to be to the health of the people, and I should like, if I am in order, to move that the New York Society of Orthodontists express at this time its approval and its appreciation of the plan and of the interest that the Surgeon General and his aide, Colonel Messner, as Chief of the Dental Division, are taking in the health of the people of the nation through dentistry and through orthodontia. I should like to move that as a motion.

. . . The motion was seconded by Drs. Waldron and Murlless, was put to a vote, and carried. . . .

Dr. Henry C. Ferris.—As a member of the first advisory committee to the Board of Health here in New York, I think it might be of interest to you to know how we put the bill

through for New York City. It took this Committee of six, representing the First and Second District Dental Societies, about three years to accomplish the objective, basically making it as short as possible. We tabulated, through the Child Health Department, the number of children left back who showed dental defects. They were examined, 250,000 of them. We obtained those records and we showed by that compilation that the city could save a million dollars a year on the cost of reeducation of the children that were left back because of defective teeth. That capped the climax and we put our bill through without any difficulty.

A few years ago when Mr. Hylan was mayor of New York, he saw fit to draw his pencil through the appropriation before the Board of Estimate and Apportionment. The First District Society placed on my shoulders the duty of trying to put the dental clinics back. A committee of five of us worked first by getting the support of seven hundred public school principals, and we secured that unanimously after about three months' work, and we showed Mr. Hylan that he was not quite so big as the law. We put the clinics back. We had eight clinics in A schools when he did away with them, and the next year we had eighteen clinics.

That is the history of New York City, and that is the way we accomplished our objectives here. I thought you might be interested in that.

Colonel Messner.—I am not an orthodontist, but for many years my sympathies have been with you men, and being in the health service I have realized what an influence your work has on the health of children. I have talked about it for a good many years, and so when it came to getting up this examination blank, I was particularly eager to get some good data that we could rely upon, and I incorporated in the blank some questions which Dr. Kelsey said we ordinary dentists could not answer. I know he was right. So far as the classification of malocclusion was concerned, my mind went back to the time and the ways I was taught Angle's classification. I think I could give that, but it is possible that the average dentist throughout the country who must make these examinations, could not. As a result of conferences with officers of this association, it was decided to ask two questions and place them in such a way that they could be answered.

TELLING THE MOTHER

JOHN C. BRAUER, D.D.S., LINCOLN, NEB.
Instructor in Operative Dentistry and Pedodontia, University of Nebraska

LITTLE Johnny, aged seven years, came home from school one noon with a slip of paper which informed his mother that he needed dental attention. Mother certainly would not tolerate Johnny having cavities, so immediately she called her dentist for an appointment.

That same noon Jimmie's mother had the same experience and she, too, called her dentist. Jimmie was nearly seven years of age. Both of these homes could be considered average American homes. Their financial condition and ability to pay were nearly the same.

Mother and Johnny arrived at the office at the appointed time and soon they were in the presence of Dr. A. The dentist, after the usual salutation asked Johnny to hop into the chair and started his examination. He found a number of cavities, one tooth badly broken down and needing extraction. Dr. A. is a fine skilled workman, but he has difficulty in making children's dentistry pay. Somehow he cannot convince the parents that their children need all the service he recommends. That day Johnny's mother was informed of all the cavities and of the necessary space retainer or bridge after the extraction. The mother asked what the cost of the fillings would be, and Dr. A. very pleasantly told her.

Again Dr. A. said that it would be best to have a space retainer placed after the extraction, but she shook her head and said, "Well, I do not know, Doctor, whether we can really afford that now. We'll see." With these remarks Johnny and his mother left, possibly to come back later and have some of his teeth filled.

The appointment time for Jimmie and his mother arrived, and they, too, were cordially greeted by Dr. B. on entering the operating room. Dr. B. made a careful examination and related the findings to the mother. Jimmie had several cavities, and an extraction was indicated in his maxillary first deciduous molar. Dr. B. realized that the average mother knows little about proper dental health so he proceeded to show Jimmie's mother the cavities in her boy's mouth.

The dentist had prepared a neat case in which were a series of deciduous and permanent teeth cross-sectioned, showing how small surface decays often progress to the pulp, which makes it imperative that cavities be recognized and filled early. In front of the chair he had a group of intraoral x-ray pictures which he showed the mother. Some of these films showed the beginning of cavities between the teeth, which could not have been detected without the x-ray picture. This was all very fascinating to the mother and Jimmie, and the mother began to wonder how many hidden cavities her son had.

Dr. B. then took several models from his case which he, himself, had made. All the models were very neat and illustrative. One model showed the closure of the space between the second deciduous molar and deciduous canine from too early extraction. The dentist explained how this can be prevented by putting in a space retainer like the one on the model. Next, he showed them an extraoral x-ray picture and explained how the permanent tooth developed beneath the deciduous tooth and that no space should be lost. Dr. B. also told the mother how much more economical it would be to have the teeth taken care of now.

Jimmie's mother could not help but be impressed and convinced that her boy needed the service. She would even sacrifice to give him this essential in life.

Words are not often impressive enough to convince those who are in need of our service. Therefore, it would seem logical to have as an aid some other medium to help convince our patients.

Department of Orthodontic Abstracts and Reviews

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New Thoughts on Tooth Biology. Review of "Zahnfleisch-Entzuendung und Zahnlockerung" by Dr. B. Gottlieb and Dr. B. Orban, 1933, Berlin, Berlinische Verlagsanstalt.

BIOLOGY. ACTIVE TOOTH ERUPTION

The most interesting chapter of this interesting book is the one dealing with the biology of the suspensory apparatus of the tooth. Here we find first a discussion of tooth eruption. The development of the root is considered as a driving force in eruption. However, the alveolar bone also takes a part in the occlusal movement of erupting teeth. Its actions are influenced by secretions of the thyroid, the parathyroids, and the hypophysis, which accelerate or retard eruption. When a tooth makes occlusal contact with its antagonist, it may be said to be completely erupted, as far as its active eruption is concerned.

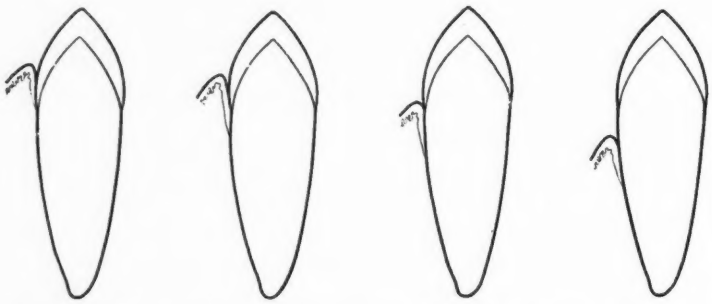
PASSIVE TOOTH ERUPTION

There is, however, another phase of tooth eruption which is concerned with the attachment of the gingiva to the tooth. First of all, it is important to note that the gingiva is not merely hugging the tooth closely (as was the old conception), but that it is organically connected with it. This connection is called the gingival attachment, and it is brought about by a hornification of its epithelial layers which cohere very firmly to the enamel. The invasion of bacteria into the periodontal tissues is thereby prevented.

Under absolutely normal conditions, the gingival pocket has practically no depth (Figs. 1-4). In other words, there is no gingival pocket at all, and the retention of food particles and bacteria is not possible. The place of the gingival attachment on the tooth crown varies. From its highest point on the tooth crown, where the attachment lies right after the tooth makes its first appearance in the mouth, it very gradually recedes toward the cementum (Fig. 1). When the person is between twenty and thirty years of age, the gingival attachment is near the enamel cementum junction of the tooth (Figs. 2 and 3). In the old person, it is on the cementum itself (Fig. 4).

(The free portion of the tooth crown is, therefore, smaller in the child than it is in the adult person. This anatomical fact should be taken into consideration when orthodontic bands are made. The operator, knowing that the anatomical crown is much larger than that part of it which is visible to his eye, may feel that he can carry his band quite some distance beneath the gingiva. In doing so, however, he would sever the attachment of the gingiva to the crown [Fig. 1], and thereby endanger the health of the periodontal tissues.)

At the same time, as the gingival attachment recedes with advancing age, the circular ligament connecting the cementum with the crest of the alveolar bone also moves apically. The crest of the alveolar bone recedes together with gingival attachment and circular ligament.



The Gingival Attachment at Different Stages of Tooth Eruption

Fig. 1.—Gingival attachment is still on the enamel (child).
Fig. 2.—Gingival attachment is partly on the enamel, partly on the cementum (adolescent).
Fig. 3.—Gingival attachment is on the cementum near the enamel cementum junction (adult).
Fig. 4.—Gingival attachment is on the cementum (aged person).

CLINICAL CROWN AND CLINICAL ROOT

In this way, the free portion of the tooth, which is called the clinical crown, becomes continuously longer. At first, the clinical crown is shorter than the anatomic crown (child, Fig. 1); at some time during life (from twenty to thirty years) they are the same size (Fig. 3); at a later age, the clinical crown is longer than the anatomic crown, and it includes a portion of the root, which is denuded from the gingiva. However, the normal wearing down of the occlusal surface of the crown counteracts this tendency. The greatest amount of wearing down occurs not during mastication but outside of mastication, especially at night when the teeth are tightly clinched together. (This viewpoint can hardly be accepted. Many people who show decided wear on their occlusal surfaces do not grit their teeth at all. Races which live on hard foods that require vigorous chewing show more attrition than races that live on soft foods. During mastication, while there is, at a given moment, food between some teeth, the cusps of other teeth strike and wear against each other.)

Under ideal conditions, the receding of the gingival attachment holds even pace with the attrition, and the clinical crown remains the same size. This is important in a functional respect because in mastication the clinical crown repre-

sents one part of a lever, while the other part is represented by the clinical root. The shorter the clinical crown and the longer the clinical root, the more favorable are the conditions. (The relationship of clinical crown to clinical root also has a bearing on orthodontic treatment. Teeth with longer clinical crowns and shorter clinical roots [adults] are more liable to tipping.)

Furthermore, the eruptive force of the tooth is also counterbalanced by the force of occlusal contact which presses the tooth back into its alveolus, sometimes with resorption of bone at the apex. If this occlusal pressure were not present, the tooth would continue to erupt and would lock the bite. Attrition on one side and occlusal pressure on the other side prevent excessive eruption of each individual tooth. For this reason, it is essential that the incisors meet in edge-to-edge bite, so that their level may not exceed that of the back teeth. (This argument would be valid only if attrition were confined to the centric position of the jaws. But the functional position for the incisors is the protrusive bite where they are subject to attrition like the rest of the teeth. Furthermore, with molars, premolars, and canines in normal occlusion, the incisors cannot be in edge-to-edge bite without spaces being present in the mandibular arch. From an anatomic, as well as orthodontic and periodontic standpoint, the edge-to-edge bite cannot be considered as having a place in normal occlusion.)

ROOT DEPOSITION AND ROOT RESORPTION

The most important life phenomenon of the tooth root is the continuous deposition of new cementum layers around its circumference. An uncalcified layer is formed first which, later on, takes up calcareous matter. This continuity of deposition makes the cementum very much different from the bone which under normal conditions undergoes resorption as well as deposition. The difference in the reaction between bone and cementum has a significance in orthodontic tooth movement which would be impossible if cementum and bone would both react in the same manner, namely by resorption. The continuous deposition of new cementum is a safeguard for the root of the tooth. Absorption of cementum is always due to forces which are excessively strong and of long duration, and it is always a sign of a pathologic condition.

Cementum hypertrophy is occasioned by inflammatory reactions (pulp gangrene) or by excessive functional demands on the tooth. If we compare the width of the periodontal membrane on teeth which are in function with those which have not antagonists, we find that the functioning tooth has a wider periodontal space.

PATHOLOGY

In the following chapters, pathologic conditions of the periodontal tissues are discussed. Among the subdivisions, we find gingivitis due to lack of mouth hygiene, faulty dental restorations, and deposits on the tooth surface. The deposits are always considered to be soft in the beginning, and easily removable with the toothbrush; later on, they become hard through the incorporation of calcium salts. The distinction between salivary and serumal deposits is discarded.

DIFFUSE ATROPHY OF ALVEOLAR BONE

Another type of pathologic condition is characterized by a diffuse atrophy of the alveolar bone. In such instances, a drifting of the tooth takes place, because of the formation of granulation tissue which is replacing the bone. The cause is seen in a systemic condition. (It is difficult to understand that the systemic disturbance would bring about an atrophy of the alveolar bone without producing symptoms in the other bones of the body. In order to explain the drifting of teeth in this way, it is necessary first to rule out all local interferences with the equilibrium of the forces of occlusion. Furthermore, the presence of a granulation tissue would have to be verified by the roentgenogram.)

TRAUMATIC OCCLUSION

Histologic examination of teeth under excessive occlusal stress shows distinct signs of damage to the tissues at the place of pressure; the damage leads from slight resorptions to severe injuries and necrosis of the periodontal tissues. How much injury occurs is dependent upon the resistance of the tooth and its periodontal structures.

THERAPY

The daily intake of vitamins A and C is recommended during the formative period. In later years, only vitamin A is beneficial because an increased rate of calcification is not desirable in the adult.

The use of a hard-bristle toothbrush is advised, with the bristles held at an angle to teeth and gingivae, in order to insure the best cleaning action and to avoid irritation of the gingivae.

As mentioned before, an edge-to-edge bite of the incisors is regarded as normal occlusion. Therefore, in all cases of overbites the wearing of a bite plate at night is suggested. (Such a procedure should depend upon the occlusion of the other teeth. In distoclusions and in mutilated cases, a bite plate would merely tip the mandibular incisors forward and produce spaces between them. In protrusions of the maxillary incisors, the bite plate would not bring them in contact with the mandibular incisors. It is, therefore, questionable how much a bite plate without other orthodontic treatment can accomplish. It must also be kept in mind, that the bite plate which prevents molars, premolars, and canines from occluding, throws a tremendous force upon the front teeth which cannot but be felt by their periodontal tissues.)

In further consequence of the viewpoint that the most severe biting and grinding occurs at night, rubber bite blocks are constructed for patients who show excessive wear on the teeth. This is done especially in instances where extensive gold or amalgam restorations and porcelain jacket crowns must be safeguarded. (We do not share the view that the occlusal pressure is greater during periods of rest than it is during mastication; a porcelain crown which needs such rubber protection at night will probably break in the course of a hearty meal.)

In the treatment of deep pyorrhea pockets, gingivectomy is used quite extensively, and the pockets are thereby eliminated as much as possible. Therapeutic reattachment of the gingivae is regarded as unattainable and, therefore, is not even attempted. Dunlop's paraffin wax and oxygen method is also used (which is interesting to note, because it is being abandoned in this country).

In cases of excessive overbite and shifting of teeth, from diffuse bone atrophy (?), orthodontic methods are employed for their correction. The appliance most used is a high labial arch wire with hooks in the canine region. The incisors are banded, and spurs, open occlusally, are put on the bands. Silk ligatures or rubber bands are placed under the spurs and attached to the hooks on the high labial wire to move the incisors upward and backward. (The silk ligatures or rubber bands are liable to exert a very quick acting force and one that is difficult to control; their substitution by a thin gauge wire seems advisable.)

Finally, several types of appliances are demonstrated which may be used for the fixation of loose teeth.

In this book, the authors have combined many ideas previously expressed in longer or shorter articles. The chapter on biology must be considered as one of the most important contributions that has ever been made to the science of dentistry. It replaces the old conception of the tooth as a rather inert structure with the view of a highly animated organ which reacts to all occurrences around it, which lives, changes, grows, becomes old and sick, just like the person that bears it. The illustrations are photomicrographs of such perfection that they can, at the present time, hardly be surpassed in clearness and vividness. In this respect, the authors' own rich collection has been aided by contributions of R. Kronfeld, A. M. Schwarz, W. Meyer, and others. The set-up of the volume is exemplary. The only major fault that an American dentist may find with the book is that it is not written in English.

E. N

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EDITORIAL

Orthodontic Laboratory Rackets

ORTHODONTICALLY speaking, the rhythmic beat of war drums is being heard in the distance. To this accompaniment is observed serpentine dancing around the various orthodontic camp fires in no uncertain protest to the constantly increased activities of orthodontic laboratories which propose and provide the "mail order" or "snipe hunt" type of treatment. Adding still more fuel to the flame is the menace of unorthodox type of treatment which is being advocated by some writers in dental journals as an answer to the dentist's economic problem, proposing the use of compromise or "mail order" orthodontic treatment to fill in his otherwise unused time.

The Southwestern Society of Orthodontists, believing that orthodontia is being rather trickily exploited in certain advertisements appearing in dental journals, has started a movement in protest against an evil that is becoming increasingly manifest. The whole laboratory gesture of the direction of orthodontic treatment and of the appliances made over plaster casts is apparently only just another product of the times; a scramble for new sources of supply and to provide a mechanical appliance for which a demand may be quickly created by advertising. Every man of experience and observation knows that the correction of malocclusion is probably the most highly technical and exacting department of dentistry and that it requires no mean skill and experience, and it is something that for the most part should not be dabbled in or experimented with.

Perfecting an oil painting and performing a surgical operation are both technical tasks; a painting is not executed by a brush manufacturer directing the artist how to wield the brush, nor is a surgical operation performed and directed by the manufacturer of artery forceps. A physician or surgeon would not ask guidance and direction from the manufacturers of devices—he would laugh at the thought of such a thing.

There is real tragedy for orthodontia as a science in this menace, and orthodontists collectively should protest against it and should insist that if laboratories must tell the dentist how to treat malocclusion (this condition, by the way, is not all the fault of the laboratories—the dentist should know better), they should, at least, refrain from giving him advice and directions which, if carried out, might easily be the basis for malpractice suits, to say nothing of the injury which might occur to his child patients.

The following are a few examples of directions for treatment gleaned from letters signed by orthodontic laboratory experts and sent to dentists for proposed treatment of their cases:

In a Class II division 1 case, "Extract the two upper lateral incisors and pull all of the upper anterior teeth back and ignore the occlusion of the mandibular teeth."

In a Class II division 1 case, "Extract an upper first bicuspid on one side."

In a Class I case, "Extract the upper canine teeth just after they have erupted in the arch."

In a Class I case, "Extract all four first permanent molars." [Normal ones.]

The situation is paradoxical, in a way, in that the dentist is licensed by the state to practice orthodontia; the dental school gives him a diploma which entitles him to practice the specialty, although he has had very little and sometimes no training in the subject, and he can be easily led to believe that although Santa Claus lives far, far away, Saint Nick can treat malocclusions for him successfully.

Orthodontists have never been heard to protest against legitimate orthodox extensions of the service to the dental profession at large; however, they do protest the making of a racket out of one of the most important depart-

ments of dental practice. All the ideas, all the mechanical devices enjoyed by the professions have been created by some man and sold by another man before anybody really understood what the real merits, limitations, and deficiencies might be.

Orthodontia enjoys a good reputation among laymen because some excellent work has been done during the past twenty-five years. Orthodontists, collectively, must protect this good name by protesting the racketeering in treatment, which is plainly another product of the times.

The Southwestern Society of Orthodontists is to be commended for its initiative and foresight in taking steps to combat certain orthodontic rackets which are wrong, unjust, and unfair to the entire science and practice. This Society has protested to dental dealers, supply houses, and to journals, and it is plain from reports already received that its protests will be heeded. A thing fundamentally as wrong as the diagnostic advice quoted above cannot and will not stand up under the full glare of the spotlight of common sense intelligence and aroused professional public opinion.

H. C. P.

IN MEMORIAM

Dr. F. Blaine Rhobotham

DR. F. BLAINE RHOBOTHAM, a contributing editor to the Department of Dentistry for Children in the JOURNAL, died May 30, 1934, at the Northwestern University Hospital in Chicago, where he had been ill for several weeks. Dr. Rhobotham was forty-three years old.

The possessor of a most delightful personality, active, useful, unselfish, and tireless, Dr. Rhobotham was one of the outstanding leaders in the dental profession and in the field of dentistry for children. He had given more than a hundred clinics before dental groups in North America and Europe. He was head of the Department of Children's Dentistry at his Alma Mater, Northwestern University, in Chicago. He conducted his practice in Chicago and had given many dentists postgraduate courses in his office. Dr. Rhobotham was graduated in 1917 from Northwestern University, became head of the Department of Children's Dentistry and the children's clinic in 1921. He was a charter member of the American Society for the Promotion of Dentistry for Children, served one term as president of the Society; he was a member of President Hoover's White House Conference on Child Health and Protection. He was a very active member of the Chicago Dental Society, the American Dental Association, and was a Fellow of the American College of Dentists.

Dr. Rhobotham had contributed greatly to the literature and work with children. He had only recently compiled a very interesting examination chart for children, which is being accepted by the best students of mouth hygiene and children's dentistry. He was always dependable, cooperative and helpful to the end that dentistry might better serve the boy and girl patient. Dr. Rhobotham will be missed by his host of friends and admirers. He has built a monument more enduring than bronze or stone, for he lived that others might enjoy life more.

"IN MEMORIAM" RESOLUTIONS OF THE EASTERN ASSOCIATION OF GRADUATES OF THE ANGLE SCHOOL OF ORTHODONTIA

Dr. Henry Albert Baker

Dr. Henry Albert Baker was born on November 27, 1848, at Newport, New Hampshire, and died in March, 1934. This brief paragraph merely calls attention to a life of eighty-six years, but fails to record the varied activities of those many years.

His youth was that of a farmer's son, but by zeal and enthusiasm he entered the medical department of Dartmouth College, and then began his life work, the practice of dentistry, in 1873. Later he went to Boston and was

graduated from the Boston Dental College in 1879. From 1880 until 1887 he was lecturer on oral deformities in the same institution, and in 1907 he began to give special lectures in the dental department of Tufts College.

In 1893 Dr. Baker conceived the idea of correcting and overcoming protruding and receding jaws by means of the use of intermaxillary elastics. It was not until ten years later that Dr. Angle stated "to the best of his knowledge and belief we are indebted to Dr. H. A. Baker of Boston for this idea, he having used it in the retraction of the protruding incisors of his son," and "hence called it the Baker anchorage."

With the death of Dr. Baker the last of the "old guard" has passed on to the Great Beyond. He belonged to the group of orthodontic pioneers with Angle, Case, Bogue, Kingsley, Farrar and Guilford, who were so earnestly interested in its development and progress.

Those of us who were present at the sixth annual banquet of the Alumni Society of Angle School of Orthodontia, in New London in 1912, recall with pleasure Dr. Baker's reminiscences and talk. Since that evening he has been with us upon several occasions. Therefore, be it

Resolved That the Eastern Association of Graduates of the Angle School record in its minutes an expression of sorrow at the death of the father of one of our esteemed members, Dr. Henry Albert Baker, the inventor of the "Baker anchorage," for through its use orthodontics was able to progress materially, and it helped us to bring about desirable results otherwise impossible to attain. Be it further

Resolved That this resolution be forwarded to his son, Lawrence, and to the various dental journals.

NEWS AND NOTES

Southern Society of Orthodontists

The thirteenth annual meeting of the Southern Society of Orthodontists will be held at the Homestead Hotel, Hot Springs, Virginia, on July 16, 17, and 18.

The place of meeting this year is of unusual interest. Hot Springs is one of the finest resorts in America, located in the mountains of the Old Dominion and having an elevation of 2,300 feet. This meeting will appeal to those who want to combine a pleasant vacation with a scientific program. There are many places of interest not far from this wonderful resort.

A cordial invitation is extended to all ethical members of the dental and medical professions. A registration fee of five dollars will be charged nonmembers attending the meeting; this will help defray the expense of the scientific program. This fee will not be charged to members of the American Society of Orthodontists or of the Virginia State Dental Association.

Part of the program to be given follows:

President's Address. N. F. Muir, Roanoke, Va.

"Some Aspects of Growth in the Dog in Certain Endocrine Conditions." O. D. Anderson, B.S., Ph.D., New York, N. Y.

"Phases of Experimental Morphology of Interest to Orthodontia." A. LeRoy Johnson, D.M.D., New York, N. Y.

"Quantitative Evaluation of Etiologic Factors in Orthodontia." J. A. Detlefsen, A.B., A.M., S.D., Swarthmore, Pa.

Case Report. J. A. Gorman, New Orleans, La.

Case Report. Harry E. Kelsey, Baltimore, Md.

"Congenital Syphilis and Malocclusion." Frederick R. Stathers, D.D.S., Philadelphia, Pa.

"The Maxillary Frenum and the Advisability of Its Surgical Removal." Winston P. Caine, D.D.S., Chattanooga, Tenn.

Case Report. W. H. Lewis, Petersburg, Va.

"Orthodontics, Whither Heading?" Leuman M. Waugh, D.D.S., F.A.C.D., New York, N. Y.

"The Conduct of an Orthodontic Practice." Charles R. Baker, D.D.S., F.A.C.D., Evanston, Ill.

"Standards for Orthodontic Materials." Wilmer Souder, Ph.D., F.A.C.D. (Honorary), Washington, D.C.

Clinics will be given by the following men: Raymond C. Willett, Peoria, Ill.; Charles R. Baker, Evanston, Ill.; Leland R. Johnson, Chicago, Ill.; Ransford B. Van Gieson, Newark, N. J.; Russell E. Irish, Pittsburgh, Pa.; Burton A. Hoffman, Buffalo, N. Y.; P. R. Ashplant, Newburgh, N. Y.; Andrew F. Jackson, Philadelphia, Pa.; Fred A. Hager, Johnstown, Pa.; Harry G. Jones, Indianapolis, Ind.; J. Lyndon Carman, Denver, Colo.; George H. Herbert, St. Louis, Mo.; H. T. Berkey, Fort Wayne, Ind.; W. P. Hoffman, Washington, D. C.; Harvey G. Bean, Toronto, Ontario; E. F. Buckley, Little Rock, Ark.; Louis H. Mann, Asheville, N. C.; P. J. Thomas, Savannah, Georgia; Herbert K. Cooper, Hershey Industrial School Hospital, Lancaster, Pa.; Van A. Stilley, Jr., Paducah, Ky.; Charles F. Bowles, Richmond, Va.; Earl W. Swinehart, Baltimore, Md.; A. C. Broussard, New Orleans, La.

The Great Lakes Association of Orthodontists

The Great Lakes Association of Orthodontists held its eighth annual meeting, May 7 and 8, 1934, at the Royal York Hotel, Toronto, Canada.

The formal program consisted of an address of welcome, business session, report of Board of Censors; President's Address by Dr. Stanley A. Mackenzie of Detroit; "Stainless Steel in Orthodontia" by Dr. Varney Barnes of Cleveland; "Orthodontic Diagnosis and Prognosis" by Dr. Frank Cartwright of Detroit; "Genetics—A Basic Consideration in the Problem of Etiology" by Dr. A. LeRoy Johnson of New York City.

At the Hospital for Sick Children, the program was as follows: "Preventive Pediatrics" by Alan Brown, M.B., F.R.C.P.; "The Dietary Factors Involved in the Production of Optimal Health" by Frederick F. Tisdall, M.D., F.R.C.P.; "Bacteriologic Studies of the Oral Cavity" by Marion M. Johnston; "The Lowering of Resistance to Infections by Dietary Deficiencies" by Elizabeth Chant Robertson, M.D.; "The Need of Additional Iron and Vitamin B in the Average Diet" by Pearl Summerfeldt, M.B., and John Ross, M.D.; "Sources of Vitamin D" by T. G. H. Drake, M.B., F.R.C.P.; "The Effect of Vitamin D in the Prevention of Tooth Decay" by P. G. Anderson, D.D.S., L.D.S.

The following clinics were given: "Correction of Impacted Canines" by Dr. Harry Jones of Indianapolis; "Photomicrographs of Stainless Steel Solder Joints" by Dr. Richard Barnes of Cleveland; "Familial Similarities of Interest to the Orthodontist" by Dr. S. T. Holmes of Ann Arbor, and Dr. F. R. Arnold of Dearborn, Mich.; "A Demonstration of the Soldering of Chromium Alloys" by Dr. A. A. Somerville of Toronto; "A Chromium Alloy Appliance for Alignment of Anterior Teeth" by Dr. M. R. Culbert of Toronto; "Several Cases Showing Congenitally Missing Teeth" by Dr. I. Steuer of Cleveland; "Practicability of Stainless Steel in Orthodontics" by Dr. C. J. Vosmik of Cleveland; "Compromise Cases" by Dr. F. R. Harding of Detroit"; "Adjustable Lingual Lock Attachment" by Dr. B. D. Jones of Detroit; "A Space Maintainer, Construction and Use of the Crozat Basket Clasp Attachment" by Dr. Barnett Malbin of Detroit.

Pacific Coast Society of Orthodontists

The Northern Section of the Pacific Coast Society of Orthodontists meets on the second Tuesday of March, June, September and December; the Central Section meets on the second Tuesday of March, June, September, and December; and the Southern Section meets on the second Friday of March, June, September, and December.

A special meeting of the Pacific Coast Society of Orthodontists was called, and was held at the University of California Dental College, May 7, at 8 P.M, in order that the Society might hear the presentation of Dr. A. B. Brussee, Denver, on the manipulation and welding of chrome alloys.

A meeting of the Southern Section of the Pacific Coast Society of Orthodontists was held on March 9, in Los Angeles. A paper was given by Dr. C. M. Alderson on "Non-mechanical Method of Erupting Impacted Teeth." He accomplished this by creating space in the usual method of treatment and then surgically removing the bone occlusally to the impacted tooth. These teeth, which were lying at various angles, would then right themselves and erupt. This was followed by x-ray pictures of a number of cases before and after treatment. Dr. Alderson showed enough cases with satisfactory results to convince his hearers of the merits of his method.

The American Board of Orthodontia

A special meeting of the American Board of Orthodontia for the consideration of new applications will be held in St. Paul, Minnesota, at Hotel Saint Paul during the meeting of the American Dental Association in August.

Those orthodontists who desire to qualify for a certificate from the Board should secure the necessary application form from the Secretary. Applications received up to the date of the meeting in St. Paul will receive preliminary consideration by the Board, and the required examination will be outlined. It will not be necessary for new applicants to appear before the Board at this time. However, such applicants should appear before the Board at the next annual meeting.

Attention is called to the following resolutions adopted by the Board:

Any person desiring to make application to the Board for a certificate shall have been in the exclusive practice of orthodontia for a period of not less than five years or an equivalent to be determined by the Board and based upon the following conditions:

First, an instructor in orthodontia in a school satisfactory to the Board.

Second, an associate in the office of an orthodontist whose standing is satisfactory to the Board.

It is, however, definitely to be understood that any person at the time of making application for a certificate shall be in the exclusive practice of orthodontia in his own name.

ALBERT H. KETCHAM, President,
Republic Building,
Denver, Colo.

OREN A. OLIVER, Secretary,
Medical Arts Building,
Nashville, Tenn.

American Society for Promotion of Dentistry for Children

The annual meeting of the American Society for the Promotion of Dentistry for Children will be held at the St. Paul Hotel, St. Paul, Minnesota, August 6, 1934.

Important papers and reports will be given, and important business will be transacted. A discussion luncheon will be held at noon, at which all phases of dentistry for children will be interestingly and informatively discussed.

WALTER T. MCFALL, Secretary,
720 New Street,
Macon, Ga.

Meeting of Psi Omega Fraternity

The annual meeting of the National Alumni Chapter of Psi Omega will be held at the Lowry Hotel, St. Paul, Minnesota, Tuesday morning, August 7.

The annual banquet and ladies' night will be held Monday night, August 6, at 7 P.M. Headquarters and registration will be at the Lowry Hotel.

WALTER T. MCFALL, Grandmaster,
720 New Street,
Macon, Ga.

Association of American Women Dentists

The thirteenth annual meeting of the Association of American Women Dentists will be held at the St. Paul Hotel, St. Paul, Minn., on August 6, 1934.

A cordial invitation is extended to all women dentists.

GENEVA E. GROTH,
1301 Medical Arts Bldg.,
Philadelphia, Pa.

American Dental Assistants Association

The tenth annual meeting of the American Dental Assistants Association will be held in St. Paul, Minnesota, August 6-10, 1934. Headquarters will be at the St. Frances Hotel. For further information address

RUTH M. CLARK, General Secretary,
Suite 1-4, Scofield Bldg.,
Minot, North Dakota.

Notes of Interest

Dr. Walter E. Newcomb and Dr. Morse R. Newcomb announce their association for the practice of orthodontia. 1532 Keith Bldg., Cleveland, Ohio.

Dr. Corvin F. Stine, of 636 Church Street, Evanston, Ill., announces the opening of a Chicago office at 55 East Washington St. Practice limited to dentistry for children.